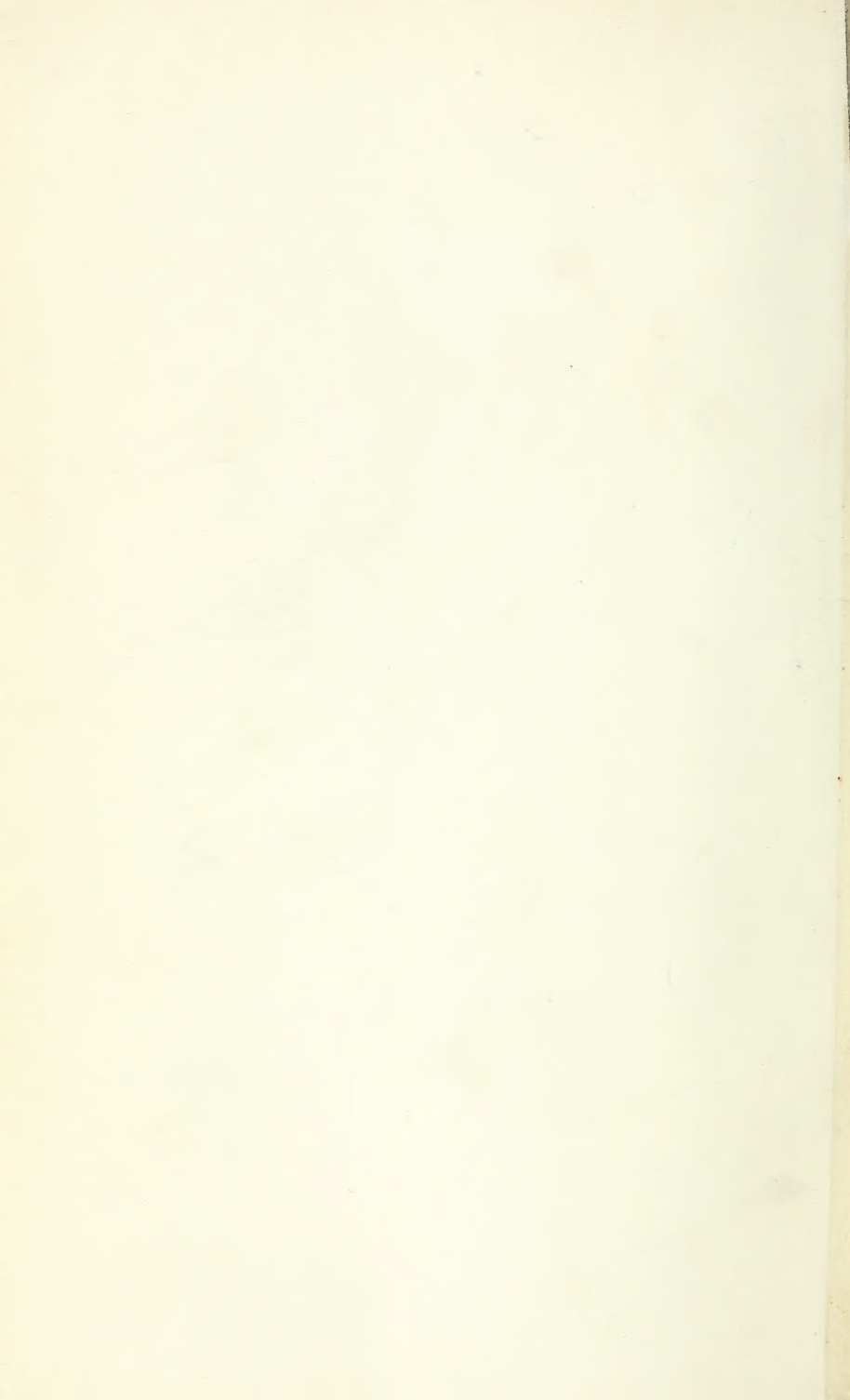






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WITH THE ASSISTANCE OF

FREDERICK BOND, F.Z.S., F.E.S.
EDWARD A. FITCH, F.L.S., F.E.S.
RICHARD SOUTH, F.E.S.

J. JENNER WEIR, F.L.S., F.Z.S.,
V.-P.E.S.
F. B. WHITE, M.D., F.L.S., F.E.S.

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“Now, we proceed from the standpoint of the systematic zoologist; taking in succession each of the families with which we deal and giving an account of the distribution, both of the entire family and as far as practicable of each of the genera of which it is composed.”—ALFRED RUSSEL WALLACE.

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THE SEASON OF 1885 IN IRELAND.

BY W. F. DE V. KANE, F.E.S.

My experience as an entomologist of the past season may be worth recording, for the sake of comparison with that of English *confrères*.

The summer of 1884 having been genial, and with a larger amount of sunshine than has been vouchsafed us for many years past, I reckoned upon an abundant harvest of Lepidoptera as a result; but in this my expectations have been falsified, at least so far as successful captures are concerned.

The salallows came into bloom rather later than usual,—about the first week in April; and about the middle of the month I found myself in Killarney. I could not complain of the scarcity of *Tæniocampæ* or hybernated *Noctuæ* of various species, nor of the various *Geometræ* which were to be beaten out or taken at rest in the daytime; the month being unusually mild, so much so that during the visit of the Prince and Princess of Wales to these lakes we were favoured with truly “royal weather,” the sun being very powerful. *Apropos* of their Royal Highnesses’ visit, an event which aroused an excitement here, proportioned, alas, to its rarity, I may perhaps be allowed to refer to a description given in the London ‘Standard’ and the Dublin ‘Freemason’s Journal,’ in which, by way of adding to the vivacity of their narrative, describing the progress of the royal party down the Upper Lake, they recorded, with striking and suggestive unanimity, that when the boats were arriving at the landing-

place, at Derrycunihy waterfall, an enthusiastic entomologist was to be seen up to his waist in the water, waving a huge net, utterly regardless of the presence of the distinguished visitors. Now as your correspondent happened to be present on the occasion in question, and neither carried a net nor saw anyone else with one, he must be pardoned for saying that the whole incident was developed out of the inner consciousness of the gentleman of the press who wrote the account. He doubtless learned from the gamekeeper that an entomologist was one of a small knot of persons who attended the arrival of the royal party; and the description represents what he thought would be appropriate conduct for one of so crack-brained a confraternity. The water must have been cold, however, for agreeable wading.

This warm weather, coupled with some rainfall about the 20th, hastened the vegetation, which was hitherto retarded, so that in a day or two the birch trees burst into leaf. In spite of the wet I remained till the 25th, and made a very fair collection, *Boarmia cinctaria* being the chief species sought for. Again on June 8th I revisited Killarney, and stayed three weeks, bringing a tent with me, which was suspended from the bough of an oak growing hard by the lodge of one of Lord Kinmare's gamekeepers, and close to the road which skirts the shores of the Upper Lake. More than one naturalist has been fain to content himself with the rough accommodation of Tower Lodge, the intelligent and kindly inmates of which I shall always remember with pleasure, as worthy examples of that genial hospitality and true refinement of sentiment which so often distinguish the better class of the Irish peasantry. Behind was a park-like glade, wooded with stately oaks, under whose shade ran a clear stream, which, rising from its sources among the heights of the Crom-a-Glaun Mountain, crept down through heather and brake, past cliff and scaur, until, leaping headlong over a picturesque precipice, it fell into the valley. The sound of this cascade filled the ear at night; and in the early dawn the red deer used to come and drink, and stare at the new addition to their scenery which I had erected. The country people, too, wondered much at it. Some thought it for the illicit sale of "refreshments;" others that it was connected in some way with photography; while my host roguishly explained to all enquirers that it was a Land League hut!

Utterly disloyal and imbued with communistic ideas as the Kerry men are,—and who can expect otherwise from the kind of newspapers that they read and believe in,—I was delighted to find that the great majority of the older generation are as kindly disposed and as naturally well-bred as the Irish of the west and south generally used to be in olden days, so that the naturalist or artist may freely trust himself among them in the wildest portions of the country. Nevertheless I should advise circumspection in choosing one's quarters. But I have wandered rather far from my subject.

The month of June was very fine and sunny, but I soon found that, let the weather be what it might in the daytime, at sunset the north-east wind, which was most persistent, made itself felt; and no Lepidoptera flew, or could be attracted to flowers, sugar, or light, with the exception of a few *Demas coryli*, *Arctia menthastri*, and a few common Noctuæ at sugar in the heart of the forest. Such pupæ as I had from the preceding year hatched out, however, in due course, perhaps a little late; so that I was driven to the conclusion that moths must have been at least normally plentiful. In the daylight, however, I had fair success at beating out Geometers; and such butterflies as frequent those parts were plentiful, as *Thecla rubi*, *Euchloë cardamines*, *Argynnis paphia*, &c. This experience was fully borne out by Mr. Willets, of Sheffield, who was collecting at Markree Castle, Co. Sligo. He was utterly at fault in the months of May, June, and July, not taking a single one of several species of Noctuæ, with which last year he had filled his boxes in the same woods; nor had he, as I had, any success with Geometers and day-flying moths, for which I cannot account by meteorological causes. I need not, therefore, explain that I was unsuccessful in meeting with *Notodonta bicolor*, an example of which was taken here many years ago by Bouchard, then in the employment of the Natural History Department of the British Museum. A report is spread also that some two summers since a specimen was found by a labourer, and sold for ten shillings to a naturalist then staying at a hotel in Killarney, who inserted a note of his acquisition in some magazine or serial. Can any reader of the 'Entomologist' verify this, so that the occurrence of this rare species in Kerry may be further authenticated? Bouchard's insect seems to be well remembered there, as I have

frequently been asked by men of the neighbourhood whether I knew "*bicolorum*," and had captured it yet.

In July matters changed slightly for the better, but I had gone to a locality on the west coast, whose immediate neighbourhood was not prolific of any varieties, though I took a few *Plusia bractea*. This species I hear was rarer than usual in its accustomed haunts.

From the close of June to the present the emergence of Lepidoptera has been strikingly in arrear; and although the summer was remarkable for its sunshine, yet insects were from a fortnight to three weeks late in appearance. In fact I met with a series of disappointments thereby, when from time to time I went to search for a well-known species in their known localities at the usual season, or a little later. *Bankia argentula*, *Erastria fasciana* (*fuscula*), *Eupithecia debiliata*, *Emmelesia tæniata*, and *Noctua dahlia* all more or less played me false. Of the latter, for instance, last year I found none in good condition on August 25th, while on September 9th ult. I captured a number, of which about half were fresh and in good order.

In September I spent a short time at Markree Castle, Co. Sligo, and from thence visited for a few days at Colonel Cooper's Shooting Lodge, on the Oxhill Mountains. The local insects in both localities seemed to be in normal abundance, and in the latter I noticed a surprising abundance (among other commoner species) of *Celaena haworthii*, some of which were still (about the 20th) in fair order; also of *Tapinostola fulva*. I was in hopes also of finding *Phibalapteryx lapidata* there, as it occurs on the moors west of Ballina, and has most likely a wide range. However I was not so fortunate, and was only able to meet with two specimens in the latter locality, in which they were first discovered by my friend, Mr. Fetherstonhaugh, many years ago. The weather was windy and sunless; and under these circumstances it is a mere chance to meet with this insect, which is a shy and very feeble flyer. Can anyone tell me whether they are to be taken in May, and if so about what portion of the month?

The phenomenal appearance of rare Sphingidæ and *Colias edusa* in England this year, as recorded in the 'Entomologist,' seems not to have been without a parallel on this side of the Channel, but to what comparative extent it is impossible to say

for want of observers here. However the following notes may be worth recording as a contribution :—*Sphinx convolvuli* was taken in the west by Mr. Russ, of Culleenamore, near Sligo, and by myself near Crossmolina, Co. Mayo; and in the extreme south by Mr. Charles Donovan, of Glandora, Co. Cork. *Acherontia atropos* also turned up in Killarney and elsewhere. *Macroglossa stellatarum* has been unusually plentiful about Dublin and in other counties, but very late in autumn. A few specimens of *Colias edusa* were seen in Co. Waterford and Wexford, and doubtless it occurred elsewhere; so perhaps we may have a flight of them next year.

To sum up. After a backward and late spring, a week's warm sunshine in April brought out foliage and insects suddenly; but upon this a continuance of north-easterly winds throughout the summer, which was unusually warm and sunny, reduced the temperature suddenly at nightfall, so that diurnal Lepidoptera were plentiful, though somewhat late; but night-flying species were scarcely to be met with, though probably as numerous as usual. Later on towards autumn sugar and flowers regained their attractiveness, and ivy-bloom has been a success, though I think *Xylina socia* (*petrificata*) is rarer than usual; but the usual dates of emergence seem to have been retarded, without exception, about a fortnight or three weeks.

Killarney, November 9, 1885.

SOME OBSERVATIONS ON LYCÆNA ARGIADES.

BY RICHARD SOUTH, F.E.S.

THE discovery of a new butterfly in England is an event of considerable interest, and worthy of more than passing notice. As far as we know at the present moment, only five specimens have been taken in England; two by Mr. Pickard-Cambridge, or rather by his sons. These were taken on Bloxworth Heath, near Wareham, in Dorsetshire. The first example, a female, was captured on August 18th, and the second, a male, was found on almost the same spot on August 20th (Entom. xviii. 249). Mr. Philip Tudor took a specimen near Bournemouth on August 21st (Entom. xviii. 252). This locality is fourteen miles distant from

Bloxworth Heath. Two other specimens have been detected by the Rev. J. S. St. John, of Whatley Rectory, Frome, Somersetshire, among a small collection of Lepidoptera he had obtained from a gentleman in his parish (*vide* Entom. xviii. 292). These last two specimens of *L. argiades* it appears were taken "with several others" eleven years ago, that is, in 1874, close by a small quarry not two miles from the Rectory. Roughly speaking, Frome is distant from Wareham about forty miles as the crow flies.

Is *Lycæna argiades* indigenous? or is its occurrence in England due to recent immigration? or to the conscious or unconscious agency of man? Whilst admitting the possibility of either of the latter contingencies, I incline to the opinion that *L. argiades* is a true native, and that it came into this country with such species as *L. bellargus* and *L. corydon* during the middle post-glacial epoch, at which period of time our islands had extensive land-connection with the Continent of Europe. It is probable, however, that *L. bellargus* and *L. corydon* were both somewhat in advance of *L. argiades*, and that all three were long preceded, perhaps in early post-glacial times, by *L. icarus* and *L. ægon*. Later on, when our islands became again separated from the Continent of Europe and the climate became colder, *L. argiades* would, supposing it to have spread over England, be driven, together with its congeners (except, perhaps, *L. icarus* and *L. ægon*), southwards.

During the geological period known as the late post-glacial epoch, various animals and plants which had come in from Central and South Europe in the middle post-glacial era, and had extended themselves northwards, would now by reason of the cold be compelled to retreat southwards. They would not be able to return to the Continent because of the sea-barriers. Under these circumstances many species would be destroyed, and others continue a precarious existence on the most southern limits of our shores, where they would be brought into severe competition one with another. *L. argiades* was probably one of those that just succeeded in holding their own until the return of a warmer period. When the climate became more genial this species would have to continue the struggle for existence, and it would find its stronger competitors among its near allies. Being the weaker species, it probably was never able to form such colonies in the South of England as *L. bellargus* and *L. corydon* have done, but,

on the contrary, barely managed to linger on in one or two favourable spots, where it still exists as a waning remnant of the original stock.

It is probable that this species occupies other exceedingly small holdings in our south-western counties than those to which reference has been made, but it is also probable that it does not enjoy the undisputed possession of such holdings. Some one or other of its congeners will still endeavour to crowd it out.

My view regarding the origin of *Lycæna argiades* in England is necessarily of a speculative character, but the present known distribution of the species is the basis upon which I have founded that view. On the Continent *L. argiades* has a range co-extensive with that of *L. bellargus* and *L. corydon*. This being the case, there does not appear to be any great improbability in supposing that when *L. bellargus* and *L. corydon* extended their range into England so also did *L. argiades*. Why this last species is not now so abundant in England as its co-migrant I have endeavoured to show.

I should add that the individuals of the first, or spring, brood of *Lycæna argiades* are smaller than those of the second, and, where it occurs, third brood. This form has been named *poly-sperchon*. There is also a variety occurring with the type, and differing therefrom in the absence of the orange spots of the under sides. It is named *coretas*.

Mr. Pickard-Cambridge informs us that when on the wing *L. argiades* is very like "a slightly worn or dull example of *L. icarus*" on the one hand, and typical *L. ægon* on the other. On a closer examination the only "blue" occurring in England with which it is likely to be confounded is *Lycæna bætica*.

In considering the probable origin of *L. bætica* in Britain, I attach, as in the case of *L. argiades*, primary importance to the present geographical distribution of the species. It is found throughout Africa, but more particularly North and South; at the Cape of Good Hope it is very common. From Africa the range extends north and west everywhere south of the Alps, and eastwards through Western Asia into Central India. Occasionally it is found in places outside these limits, as, for instance, in the Islands of Madeira and Ascension, Switzerland, Germany, Belgium, the North of France, the Channel Islands, and also in England.

The first record we have of the occurrence of *L. batica* in England is that of a specimen taken at Brighton in 1859. Since that time four other examples have been recorded, the latest being one at Bournemouth in 1882.

Looking at the fact that this species is not, except in rare instances, found far north of the Alps, I am inclined to think that its introduction into England took place in recent times.

There are three other species of *Lycæna* with tail-like appendages occurring in Europe, viz., *L. telicanus*, found in the South of Europe, North and South Africa, and Western Asia; it is, however, more particularly confined to those countries which have a Mediterranean sea-board. *L. balcanica* in Turkey, Western Asia, and Persia; Dr. Lang says this insect is very closely allied to the African *L. theophrastus*. *L. fischeri* inhabits the steppes of South-east Russia, and dry meadows in the Ural Mountains and the Altai. This species is rare, and has very minute tails.

12, Abbey Gardens, St. John's Wood, London, N.W., Dec., 1885.

DIPTERA BRED FROM THE PUPÆ IN 1885.

BY PETER INCHBALD, F.Z.S., F.E.S.

I HAVE not much to tell of, relative to the rearing of Diptera in 1885, and yet there are some of your readers that may possibly be interested in these scanty gleanings from the field of Nature. Each personal observation, indeed, when duly studied and investigated, must carry some weight with it.

Every one knows and admires the red campion (*Lychnis dioica*) of our hedgerows. It is often in flower till quite late in the year. Its leaves feed the larva of a dipterous miner (*Agromyza flavifrons*, Meigen.) A conspicuous white blotch on the upper side of the leaf reveals the miner and his work. Sometimes, indeed, the parenchyma of the whole leaf is consumed by the ravenous larva. When full-fed it eats its way out of the leaf, and pupates in the soil, or among the dead leaves below. The pupa-case is shining brown. The first generation appears in July, and a second brood generally follows later in the year. The fly is shining black, and, as its specific name implies, is con-

spicuous for its ochreous-yellow head. The ovipositor, as Kalt-enbach rightly observes, "is short in proportion to its body, scarcely exceeding the length of the last abdominal ring."

Phorbia floricola, Zetterstedt, is my next hatch. This fly feeds in the larva-state on the marsh ragwort (*Senecio aquaticus*) in May and June, consuming the pulp of the receptacle, and converting it into a discoloured mass. The receptacle, indeed, is completely hollowed out by the feeding of the larva, which is found singly within the void. It pupates within, and appears in July, or even earlier. The particulars of its feeding become interesting, the more so, as Dr. Meade says that the "life-history of the Anthomyidæ is but imperfectly understood." The disproportion of the sexes, likewise, is singular, the female vastly predominating; indeed, I only bred *one* male; all the rest were females. It requires a practised eye to detect the existence of the larva within the flower-head, as the evidence of its feeding is not outwardly very visible.

The habits of the larva of *Phytomyza lateralis*, Meigen, are very like those of *Phorbia floricola*. It, too, feeds within the receptacle of the wild chamomile (*Matricaria inodora*), so common on the borders of our cornfields in the summer. Each flower-head mostly contains a single larva, though occasionally I find two. Its nesting-place in the receptacle is not so hidden as is the case in the last-mentioned fly. A dark spot among the disk-florets usually betrays its existence. The flies are very common; I bred them in considerable numbers—both sexes—during the first week in August. The fly is double-brooded, as I reared them again in October. The yellow lateral line makes the lively little fly easy to recognise. Kaltenbach states that the "larva feeds" on the unripe seeds. This is not my experience, though our food-plants are identical. He mentions further, that it feeds in the stems of the nettle and vervain—doubtless in these cases on the pulp!

Those who have had the advantage of seeing Loew's splendid work on the 'European Trypetidæ,' and the wonderful wings he has photographed, will enter into the pleasure one feels in rearing these bar-winged flies from the larvæ, and tracing a portion of their life-history, by ascertaining the plant that feeds and protects them in their earlier and more helpless stages of growth. Loew figures 121 European species. Of these we

may possibly claim a fourth as British. The larvæ of these interesting flies feed mostly on the seeds of our composite plants. I have already reared several. I have one to add to the Trypetidæ this year. It is *Trypeta stellata*, Fuessli. Curtis noticed the fly in the heads of the corn chamomile (*Anthemis cotula*) and raised it in August. Our continental friends have reared the same fly from the groundsel, ragwort, chamomile, and even the goat's-beard (*Tragopogon pratensis*). I raised a beautiful example of this fly on the 17th of July, from the flower-head of *Coreopsis grandiflora*, a garden flower that came from Cambridge. The star at the tip of the wing is very conspicuous. It would seem, from Kaltenbach, to be exclusively attached to composite vegetation.

I found, in September, the leaves of a tall-growing buttercup (*Ranunculus lingua*) that is not uncommon in the fenny parts of Yorkshire, mined, apparently, by one of the Anthomyidæ. The mine commences at the top of the long leaf, and runs nearly parallel to the mid-vein the whole length of the leaf. I am well acquainted with the mines of *Phytomyza flava*, whose white and twisted minings are so common on the leaves of the creeping crow-foot (*R. repens*), and have often bred the miner. The economy of this miner, however, differs from that of the one that affects *Ranunculus lingua*, even allowing for all differences in the shape of the respective leaves. Many of the leaves, I may remark, were mined from end to end in a straight line. The larvæ had all escaped from the mines, so that we must infer that they pupate in the soil below. My latest, and possibly my best discovery in insect life, in 1885, is *Cecidomyia caricis*, if I can but succeed in rearing the imago. I found it, as a larva, feeding on the rudimentary utricle of *Carex muricata*; it has since spun a slight web within the overwrapping scales, that will serve it as a home for the winter. The *Carex* that is affected by the cecid is fond of moist meadows. I should infer, therefore, that the pupa will need to be kept fairly moist, till it gives forth its tenant, much after the method I have adopted so successfully in the case of *C. cardaminis*. It has not been reared that I am aware of. Bergenstamm says in his 'Synopsis,' published at Vienna in 1876: "Imago unknown"; and in a supplementary note, H. Loew simply adds: "the larvæ deform the fruits of *Carex muricata*."

Fulwith Grange, near Harrogate, December, 1885.

DESCRIPTIONS OF NEW SPECIES AND A NEW GENUS
OF RHOPALOCERA FROM THE MALAY PENINSULA.

By W. L. DISTANT, F.E.S.

Fam. NYMPHALIDÆ.

Subfam. NYMPHALINÆ.

EUTHALIA GOODRICHI, n. sp.

Female.—Wings above pale olivaceous brown; anterior wings with a small rufous spot margined with black in cell, and a similarly coloured oblong discocellular spot at end of cell, beyond cell a transverse series of light greyish white spots cross the wing, the spots placed singly between the nervules, excepting two between the third median nervule and submedian nervure, the lowermost on inner margin minute; beyond these spots is a violaceous fascia, containing a subapical greyish white spot, and outwardly marked with a series of dark purplish spots placed between the nervules; posterior wings with a discal series of greyish white spots placed between the nervules, but not extending beneath the upper median nervule, a small rufous spot margined with black in cell, and a submarginal angularly waved linear dark purplish fascia. Wings beneath much paler than above; anterior wings with the spots in the cell larger and brighter, greyish white spots as above, followed by a series of dark purplish spots, much smaller than those above; posterior wings with a small spot in cell as above, and a discocellular spot at end of cell, the series of greyish white spots as above, but continued to abdominal margin a little above anal angle, the last spot being longest, the waved fascia above being replaced by a series of small dark spots as on anterior wings. Body and legs more or less concolorous with wings. Exp. wings, 75 mill.

Hab.—Perak (Lieut. Goodrich; coll. Dist.).

TANAËCIA CONSANGUINEA, n. sp.

Male.—Closely allied to *T. pulasara*, but differing in the following particulars:—The six contiguous transverse spots on apical half of anterior wings are more regular in size, and therefore their inner margins are subparallel, and not deeply and sinuously irregular, as in *T. pulasara*; these spots are also darker in hue; the posterior wings have the outer margin of the

contiguous spots on outer area bordered with greyish white, and the violaceous apical shading in *T. pulasara* is absent in *T. consanguinea*; anterior wings beneath with corresponding differences, as above. Exp. wings, male, 55 mill.

Hab.—Perak (Künstler; coll. Ribbe).

Fam. ERYCINIDÆ

Subfam. NEMEOBIINÆ.

SIMISKINA, gen. nov.

This genus may be thus briefly and comparatively characterised. It differs from *Abisara* in having the lower discocellular nervule of the posterior wings much longer than the upper, thus resembling *Stiboges*; but from that genus it is easily distinguished by the subcostal nervules of the posterior wings, which bifurcate before the upper end of cell. In shape of wings and general superficial features *Simiskina* resembles *Abisara*.

SIMISKINA FULGENS, n. sp.

Wings above bright ochraceous; anterior wings with the apex, outer and inner margins, broadly dark brownish, with a narrow linear discocellular spot of the same colour; posterior wings with the cellular area, the whole area between cell, upper median nervule and abdominal margin, and a broad outer margin, dark brownish. Wings beneath pale ochraceous; both wings with linear pale castaneous discocellular spots, a much waved castaneous fascia crossing the wings beyond cells, recurved, and terminating on abdominal margin of posterior wings; two fainter outer discal fasciæ, the outermost of which is blackened on posterior wings; outer margins pale castaneous on posterior wings, preceded by two dark linear fasciæ. Body above fuscous; beneath more or less concolorous with wings. Exp. wings, 36 mill.

Hab.—Penang (Lieut. Goodrich; coll. Dist.).

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN KENT.—The following particulars of an unrecorded occurrence of *Anosia plexippus* (*Danaïa archippus*) have been forwarded to me. The writer is Mr. F. W. Hawes, of 14 Dovecote Villas, Wood Green. I have seen the fragments, and

have no doubt as to the genuine character of the communication thus adding another county—Kent—in which the species has been observed:—"My cousin, F. J. Hawes, was at school at Snodland, near Maidstone, in the month of September, 1881, and it was on the afternoon of Wednesday, 21st, while out with his schoolfellows, that he saw the specimen of *Anosia plexippus* I now have, flying heavily over a meadow near the school. After two or three attempts he succeeded in getting the insect under his hat, and also in transferring it to a box, and so to a drawer in his bedroom. Here it lay for more than three weeks; after which he doubled it over in a letter and forwarded it to me,—minus head, antennæ, and left fore wing,—asking at the same time to be told the name. Of course it is owing to my cousin's rough treatment that the butterfly is in such poor condition. It is, nevertheless, a rather large male example when compared with some which were exhibited on Thursday last at the South London Entomological Society's meeting. I need hardly add that as my cousin is not an entomologist there need be no doubt entertained of the truth of this story. I think it is an encouraging sign for the naturalisation of *A. plexippus* that it has now been taken and observed in Cornwall, Devon, Dorset, Isle of Wight, Sussex, and Kent,—comprising the whole of the counties on our south coast."—J. JENNER WEIR; Beckenham, Kent, December 8, 1885.

LYCÆNA ARGIOLUS IN THE MIDLANDS.—It seems strange that in this part of the country there should appear to be only one brood of this butterfly in the year. The earliest date on which I have known it to occur has been the 5th of April, though it usually does not appear until about the 20th of the same month. It is no longer to be seen after the first or second week in June. —W. HARCOURT BATH; Birmingham, November, 1885.

COLIAS EDUSA IN NORTH WARWICKSHIRE.—On September 20th last I captured a female specimen of this insect. *Colias edusa* is very scarce in these parts. This is the only capture I have known since the "*edusa* year" of 1877.—ID.

DIMINUTIVE DIURNI.—I have long since proved to satisfaction that butterflies and moths may be dwarfed by simply starving the caterpillars; and the progeny of Southern European parents I could show have proved dwarfs when reared in this country. *Colias edusa*, however, appears to vary remarkably in size in

Europe in a state of nature. I have females taken at Luchon, in the Pyrenees, in 1872, that exceed two inches in wing expanse; and one captured on the blue pimpernels, at the side of the Palladolid Canal, in 1884, that only measures (one inch and seven lines), broadly speaking, an inch and a half. I may remark that the former were captured in the elevated misty valley of the Poet's Narcissus, or Val-de-Lys, in the month of May; and the latter was captured on the dry limestone and sand of Castile on the 5th of July, in the summer heat. So, likewise, I have males, taken at Luchon, that measure two inches and a half; and one from the Plains of Lombardy, taken in 1878, that only measures one inch and eleven lines; I believe it to be one of the summer brood. Many of our butterflies, as I could show, become larger, and are so in more congenial conditions on the plains of Southern Europe. The lucern probably grows too dry, or the heats are too languid there for the full development of *Colias edusa*.—A. H. SWINTON; Binfield House, Guildford, December, 1885.

SPHINX PINASTRI AND OTHER SPHINGIDÆ AT ALDEBURGH.—During a recent visit to Aldeburgh, Suffolk, I had the pleasure of making the acquaintance of a British larva of *Sphinx pinastri*, which was in the possession of Dr. Hele, who has been successful in the capture and breeding of this rare insect. On enquiring into its history I was informed by Dr. Hele that in June last he had taken at rest upon a pine tree a crippled female, which laid two fertile eggs, from which he obtained two larvæ. One of these larvæ unfortunately died, the remains of which I saw, but the survivor was a very healthy example; and I since learn was successfully photographed the day before it went to earth. I also had the opportunity of examining a goodly number of the specimens which he had taken in previous years, or reared from the eggs which he had procured from captured females, together with the pupa-cases, which are very similar to those of *Sphinx ligustri*, but of smaller size. In addition to the specimens exhibited by Dr. Hele, I saw a specimen that was captured at rest near the church by a son of the vicar. I may own that at one time I was sceptical as to the genuineness of the title of this species as a British insect, and that before my visit to Aldeburgh I regarded the alleged capture as a possible imposture; but incredulity has given place to conviction, and I consider that the position of *S. pinastri* in our fauna is materially strengthened.

It has, I am informed, been suspected that it may have been accidentally imported or otherwise. I am positively assured by Dr. Hele that there is no ground for believing that there has been any attempt to acclimatise or artificially introduce the insect; and as far as I am able to ascertain there is no evidence of any such attempt. I am not at liberty to disclose the precise locality of capture. Isolated specimens have, it is true, been captured at Ipswich and elsewhere; but I may say that the spot where the largest number have been taken is not favourable to the view of an artificial introduction, it being inaccessible to dealers, who might have a motive to deceive, and to the public generally. It is possible that *S. pinastri* has for centuries inhabited some of our pine woods, where it occurs now from year to year; but this must be an open question; and it is, perhaps, more probable that it has, like some of our other rare Sphinges, made our country from time to time the land of its adoption. I submit that although its appearance is, perhaps, more local, it has with them an equal claim to be recognised as a British species. I may add that two specimens of *Chærocampa celerio* were captured at Aldeburgh in October last,—one a perfect beauty; the other was knocked down from a window by a servant girl, and was sadly damaged by her duster. *Acherontia atropos* was very plentiful at Aldeburgh.—SIDNEY COOPER; Friar's Watch, Walthamstow, December 3, 1885.

[If Mr. Cooper will refer to the 'Entomologist' Synonymic List of British Lepidoptera, he will find that *Sphinx pinastri* is now recognised as a British insect.—ED.]

ACHERONTIA ATROPOS AND SPHINX CONVULVULI ABUNDANT IN ESSEX.—At Walthamstow I obtained about fifty larvæ of *A. atropos*, most of which I found myself in the potato fields. I also captured in my garden at Walthamstow six specimens of *Sphinx convulvuli*, but not in such fine condition as those which I took there ten years ago, as unfortunately I was a little too late.—SIDNEY COOPER.

ACHERONTIA ATROPOS, &c., AT CHRISTCHURCH.—On the morning of November 10th, 1885, a male specimen of *A. atropos* was brought to me alive by a little girl, and by the appearance of the insect it must have only just emerged from the pupa; but, as far as I could ascertain, it was found at rest on a potato-bed. The

weather being so cold through the month I have seen scarcely anything at ivy-bloom or sugar. My captures of any importance consist only in the genus *Xylina*; at light, *Hybernia defoliaria*, *H. aurantiaria*, and *Himera pennaria* (numerous). I have also to record from Ealing, on the night of the 2nd inst., a specimen of *Dasypolia templi*, at rest on a street lamp, in perfect condition. — J. M. ADYE; Somerford Grange, Christchurch, November 18, 1885.

DASYCAMPA RUBIGINEA AT CHRISTCHURCH.—After many days' perseverance I have, at last, obtained specimens of *D. rubiginea*; the first on November 24th at sugar, and a second on the 30th at ivy bloom; both in fine condition.—J. M. ADYE; St. Erith, Castle Hill Road, Ealing, S.W.

ASTHENA BLOMERI.—As this insect is just now under discussion, the following notes may be of interest:—I have taken the species in a wood near here annually since 1880, though it is very uncertain in appearance, being abundant some seasons, and in others scarce. The earliest date on which I have taken it is May 11th in 1882; and the latest, July 8th in 1884. The latter was in good condition, evidently not long out of pupa. The average date of its first appearance in this district seems to be about the 24th of May, and it is most abundant about the middle of June.—THOMAS GIBBS, jun.; Brethby, Burton-on-Trent.

BRYOTROPHA POLITELLA IN YORKSHIRE.—I recently sent to Mr. C. G. Barrett, for determination, half a dozen specimens of a *Gelechia* I found commonly during the past summer in the wood and on the adjoining moorland hill-side, overhanging Greenfield railway station. Mr. Barrett informed me they were the local *B. politella* (*Gelechia expolitella*).—G. T. PORRITT; Huddersfield.

CUCULLIA ARTEMISIÆ: ENQUIRY.—May I enquire, through the medium of the 'Entomologist,' whether the fortunate captor of *Cucullia artemisiæ* and *Callimorpha hera* (Entom. xviii. 290, 297) is identical with a Mr. Brooks, of Norwood, who, earlier in the year, was offering for sale or exchange *Vanessa callirrhoë* as a fine variety of *V. atalanta*, also *V. urticæ* (var. *ichnusa*), only asking £2 for the first of these specimens?—SYDNEY WEBB; Maidstone House, Dover, December, 1885.

SOUND EMITTED BY THE LARVA OF ACHERONTIA ATROPOS.—In reply to Mr. J. R. S. Clifford (Entom. xviii. 301), who

enquires if the larvæ of *Acherontia atropos* can produce sound, I enclose the report of Mr. E. B. Poulton, of Oxford (who is colouring the larvæ of the Sphingidæ from living specimens), to whom I sent, through Mr. H. B. Spencer, a fine larva in the autumn of this year. Thinking the information will be interesting, I forward it for your insertion:—"The fact that a sound is emitted by this larva has been often stated, and the sound has been compared to the snap that accompanies an electric spark. During the past autumn (1885) the larva was very common, and I received several specimens; of these only one made the sound, as far as my observations went. There is no doubt the sound is of a defensive character, and is uttered when the animal is irritated, as has been positively stated; thus when the larva was handled it generally made the snapping sound, and more especially when it was tapped on the head. From the observation of one specimen I believe that the sound proceeds from the mandibles. These are very large, and have a considerable range of movement, so that they can bite over each other. On the outer surface of each is a transverse tuberculated ridge, and when one mandible is outside the other, and is gliding over the outer surface of the latter towards its base, it is momentarily arrested by the ridge, but passes over it with a jerk, that causes sharp collision with the outer surface on the basal side of the ridge. The relative position of the mandibles during the momentary arrest is here roughly shown. This sudden jerk and resisting clash of the hard chitinous surfaces is, I believe, the cause of the sound. One is tempted to suggest an explanation of the origin of this sound so unusual among larvæ. When irritated or attacked, large larvæ have the habit of biting vigorously in all directions, but without aim, and generally with a perfectly fruitless result. Their protection is not of the actively defensive kind, because of their peculiar anatomical construction, which renders them liable to death from the smallest injuries (see Trans. Ent. Soc. Lond., 1885, pp. 321 *et seq.*, for a further development of this view of the writer). Nevertheless when detected, and as a last chance, they make this aimless and nearly always useless resistance; the resistance is useless because aimless, for the mandibles are moved with great



force, and would inflict serious injury if they were ever successful in catching hold of an enemy. But the defence of the larva is practically concentrated in other directions, and this means of protection remains unimproved at a point at which it is almost useless. It is, nevertheless, likely that any sound, which was incidentally caused during the process, might be highly protective, because it would certainly terrify the enemies of the larva. Hence where it is likely to have been improved up to the effective point it has been reached."—JAMES A. TAWELL; Earls Colne, November 23, 1885.

SPHINX CONVULVULI, SOUND PRODUCED DURING FLIGHT.—Your correspondent is certainly mistaken in supposing (Entom. xviii. 296) that *Sphinx convulvuli* produces no sound whilst hovering in search of food. The sound created by the rapid vibration of the wings is very perceptible, but to detect it, whilst the insect is poised, the entomologist must lay aside his eagerness to catch, being content to watch, and bend his head in perfect quietness over the flower-bed. The loss of a specimen or two might cause regret to some, but the true lover of Nature delights in taking cognizance of everything. With me *Macroglossa stellatarum* is a great favourite, but *Sphinx convulvuli* excels, although in many things resembling the former. With its prodigious size is combined ease of movement; the graceful manner in which it coils and uncoils the long proboscis; the lightness with which it floats from flower to flower, ever and anon poisoning itself to extract the nectar, and then darting off in a rapid but somewhat irregular flight, sometimes to a considerable height, perhaps to return to the same flower-bed,—is simply delightful to a keen observer. I may mention that this *Sphinx* commences its flight before daylight has departed, and appears to be fearless of moonlight, thus making observation simple. Those who desire this species should cultivate the white petunia, and if this lepidopteron is to be found in the neighbourhood few will be the seasons during which specimens may not be taken.—L. F. ALLEN; East Park House, Southampton, November 21, 1885.

PERFORATED OVA OF LEPIDOPTERA.—It is not quite clear to me whether Mr. C. B. Holman Hunt (Entom. xviii. 324) is astonished at the discovery of perforated ova in a given genus, or whether he wishes for information as to "perforated ova" in Lepidoptera generally. In the latter case he will do well to

consult Leuckart's essay (in the *Archiv. f. Anatomie u. Physiologie*, 1885), 'Ueber die Micropyle und den feineren Bau der Schalenhaut bei den Insekteneiern,' one of the plates illustrating which is devoted to the eggs of Lepidoptera.—F. JEFFREY BELL; 5, Radnor Place, Gloucester Square, W.

ANDRICUS (APHILOTHRIX) GLANDULÆ, *Schenck*.—On the 4th November, in walking through Cann Wood, near Plymouth, in search of oak-galls, I found this turban-like gall on the terminal branches of coppice-grown young oaks. This gall is described and nicely figured in the '*Entomologist*' (vol. ix. p. 1); following the description it is stated that Mr. Rothera found this gall at Ollerton, near Nottingham; but no mention is made whether he bred the insect or not. Can Mr. Fitch say when the gall-maker appears, and if any *Synergus* or parasite has been bred from the gall?—G. C. BIGNELL; Stonehouse, Plymouth, Nov. 17, 1885.

TEGEOCRANUS CEPHEIFORMIS.—Mr. A. D. Michael exhibited and described, at a late meeting of the Linnean Society, the remarkable nymphal stage of the above species, belonging to the family Oribatidæ, which he has lately discovered for the first time in England. The whole life-history of this animal he has now succeeded in tracing, having in the first instance been led to the correct result by dissecting the already fully-formed imago out of the inert nymph. The creature in its nymphal stage is an exceedingly strange and beautiful one; carrying on its back, as concentric shields, the dorsal portions of all its cast-skins, and these bordered by a series of singular projections, each bearing a rose-leaf-like cuticular process of transparent membrane with chitinous nervures. The drawing of the nymph was first sent to Mr. Michael, two years ago, by Herr Pappe, of Bremen.

NORTH KENT ENTOMOLOGICAL SOCIETY'S EXHIBITION.—The first Annual Exhibition of Insects, shown in Pocket-boxes, of this Society, was held at the Coffee Palace, Woolwich, on Thursday, November 19th, and, although the majority of the members have had but little spare time during the past season, it may be considered fairly satisfactory. The exhibitors were the President of the Society, Mr. W. G. Dawson, whose contribution included *Thecla rubi*, *T. w-album*, *Sphinx convolvuli*, *Nemoria viridata*, and many other species too numerous to mention. Mr. Smith, Vice-President, exhibited, among others, *Argynnis paphia*,

Limenitis sibylla, *Colias edusa*, *Trochilium crabroniformis* (*bembeciformis*), very fine *Lasiocampa quercifolia*, and *Saturnia pavonia*. Mr. Webb exhibited a pale variety of *Abraaxas grossulariata*, *A. sylvata* (*ulmata*), *Notodonta chaonia*, and others. Mr. J. Knight exhibited bred and captured Lepidoptera; among the former were *Meliana flammea* and *Drepana harpagula* (*sicula*); and the latter included *Sphinx convolvuli* and *Toxocampa pastinum*. Mr. Poore's included a beautiful variety of *Sphinx convolvuli*, and many other good species. Mr. E. Knight's were a good variety of *Chelonia villica*, *Eucosmia undulata*, *Phytometra viridaria* (*cenea*), &c. Mr. Sargent, a variety of *Leucoma salicis*, with a black border on all the wings. Mr. Holmes, a good blotched variety of *Vanessa atalanta*. Mr. Gower had, among others, *Melitea aurinia* and *Calligenia miniata*. Some very good hybrids of *Smerinthus ocellatus* and *S. populi* were also exhibited by a gentleman who was present as a visitor. The Society has now completed the first year of existence, and appears to be firmly established.—H. J. WEBB, Sec.; 5, Downes Place, Plumstead, Nov. 21, 1885.

EUROPEAN RHOPALOCERA.—We have received a specimen copy of a list of 'European Rhopalocera, with their varieties and principal synonyms,' by W. F. de Vismes Kane, M.A., M.R.I.A. (London, Macmillan & Co., 1885); printed on one side only for labelling purposes.

AMERICAN BEETLES.—Henshaw's list of the Coleoptera of America, north of Mexico, just issued, includes 9238 species. Crotch's check-list, published in 1874, contained 7450 species. Previous to these came the lists published by Le Conte; and in 1880 Austin published a supplement to Crotch, bringing the number of nominal species up to 9704, which recent studies have greatly reduced. —'Science,' vi. 382, October 30, 1885.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY EXHIBITION.

ON the 3rd inst. the Annual Exhibition of the above Society was held in the rooms at No. 1, Denman Street, London Bridge. There was a very large attendance both of members and their friends. The exhibits represented nearly all branches

of biological science, but the class Insecta was more especially favoured. These last were so numerous that it would be utterly impossible to mention them all in detail, but among those we particularly noticed were Mr. McLachlan's cases of European caddis-flies (Trichoptera), the Ascalaphidæ, ant-lions (Myrmeleonidæ) and Nemopteridæ, and some larval cases from Zanzibar resembling shells of the molluscan genus *Cyclostoma*, formed by one of the Psychidæ.

Mr. J. Jenner Weir, four cases of Exotic Lepidoptera, including species of the genus Satyridæ, comprising the continental and insular topomorphic species. Danaian butterflies of the genera *Tirimula* and *Anosia*, and specimens of *A. plexippus* (*Danaïs archippus*), from widely different parts of the world; also exhibits of the genera *Morpho* and *Caligo*.

The President, Mr. R. South, twelve cases illustrating comparative series of *Melitæa athalia* from various English localities, together with specimens of *M. athalia*, *M. dictynna*, *M. parthenie* and *M. aurelia* from Switzerland; series of *Melitæa aurinia* (*artemis*) from various English, Irish and Scotch localities; series of *Melitæa cynthia*, *M. aurinia* (*artemis*) and var. *merope*, *M. cinxia*, *M. phœbe*, *M. didyma* and var. *alpina*, *M. dictynna*, *M. aurelia*, *M. parthenie* and var. *varia* from Switzerland; series of *Lycæna ægon*, *L. astrarche* (*agestis*) var. *salmacis* and var. *artaxerxes*, *L. bellargus* (*adonis*), all British; *Lycæna icarus* (*alexis*) from various English, Irish and Scotch localities, including several specimens of the var. *icarinus* and forms intermediate between this var. and the type; *Lycæna corydon* from Isle of Wight this year; several of the females are much suffused with blue and the under sides show interesting variations; twenty species of *Lycæna* from Switzerland; *Cænonympha typhon* (*davus*) from various Scotch and North English localities; some very handsome forms among an exceedingly long and variable series of *Boarmia repandata*, bred this year from larvæ collected in North Devon; *Hypsipetes sordidata* (= *elutata*) from various British localities, and a series of *Larentia cæsiata* from Scotland and the north of England, together with three preserved larvæ of the species from Shetland; a bred series of *Sesia chrysidiformis*; an interesting and variable series of *Zygæna filipendulæ*; a series, including banded forms, of *Gnophos obscurata* (these three species from Folkestone in 1885);

thirty species of rare British Tortrices taken or bred the same year; and a large number of rare and interesting Lepidoptera, including seven forms of the genus *Argynnis* from Switzerland, and examples of Swiss Satyridæ.

Mr. Adkin, four cabinet drawers containing, with others, the genera *Argynnis*, *Melitæa* and *Vanessa* (among the latter were some fine smoky varieties of *V. urticæ*), Lycænidæ including *Polyommatus dispar*, *Heptalus humuli* var. *hethlandica*, *H. velleda*, varieties of *Zygæna filipendulæ*, and a long and varied series of *Nola centonalis*, *Eugonia quercinaria* (*angularia*) var. *infusata*, fine bred series of *Endromis versicolor*, and many others.

Mr. Elisha, four drawers from his beautiful collection of Tortrices; a fine series of *Geometra smaragdaria*, bred from Essex larvæ, and *Coleophora vibicigerella*, bred from larvæ, also taken in the Essex salt-marshes during the present year. The larva of the last-named species, being but just recently discovered, attracted the particular attention of micro-lepidopterists.

Mr. Farn exhibited an hermaphrodite specimen of *Pæcilocampa populi*, a series of *Theristis mucronella* (*Pterozia caudella*), and fine varieties of *Penthina pruniana* and *Spilonota lariciana*; also a very striking form of a species of *Scoparia*, which was not identified. Mr. Wellman showed, among many others, *Sesia chrysidiformis*, *S. ichneumoniformis*, and *S. culiciformis*, *Chærocampa celerio* captured at Walton-on-the-Naze; varieties of *Cidaria suffumata*, a fine series of *Bryophila muralis* (*glandifera*), imagines of a third brood of *Acidalia rubiginata* (*rubricata*), and second broods of *A. trigeminata* and *holosericata*; *A. ochrata* and *Psamotis pulveralis*, taken at Folkestone by himself; also a number of species of Tortrices and Tineæ.

Mr. Tugwell, three drawers containing very long and varied series of *Zygænidæ*, including his unique *Syntomis phegea*, two "IVI" varieties (*signata*) of *Setina irrorella*, the whole of the *Dianthæciæ*, with northern and southern forms, and other rarities.

Mr. Tutt, two drawers, showing the most remarkable inter-variation of *Agrotis tritici*, *A. nigricans*, *A. obelisca*, and *A. cursoria*.

Mr. G. W. Bird, species of Lepidoptera from the Cambridge and Norfolk fens including *Macrogaster castaneæ* (*arundinis*), *Acronycta strigosa*, *Leucania obsoleta*, *Senta maritima* (*ulvæ*) and varieties; a remarkably fine series of *Schænobius mucronellus*,

Nascia ciliaris, *Platyptilia isodactylus*, *Coccyx ochsenheimeriana*, *Argyrolepis schreberiana*, and *Plusia chryson* (*orichalcea*).

Mr. J. Trimmer Williams, bred series of *Boletobia fuliginaria*, from South London; a variety of *Cabera pusaria*, having a sub-marginal band in addition to the usual three linear markings, and others.

Mr. B. A. Bower, fine series each of *Eupœcilia curvistrigana*, *E. subroseana*, varied forms of *Peronea tristana*, *P. hastiana*, *Euzophora cinerosella* and *Coleophora conyzæ*.

Mr. Levett, variety of *Vanessa urticæ*, a rather uncommon banded female variety of *Angerona prunaria*, without the apical band of the forewing, and several others.

Mr. H. T. Dobson, *Eugonia erosaria*, a dark form of *Drepana lacertinaria*.

Mr. Watkins, four cases of Exotic Lepidoptera, two of them showing exotic silk-producing moths.

Mr. Jager and Mr. Brooks, specimens of *Callimorpha hera* captured in Devonshire, the former's example of *C. hera* being the var. *lutescens*; the latter gentleman also exhibited two specimens of *Cucullia artemisiæ*, taken by him in Devonshire in August last.

Mr. Neave, varieties of *L. icarus* (*alexis*); one of them, taken at Brighton, was a very striking and beautiful form, and attracted a great amount of attention, the usual spots on the underside being replaced by a series of most regularly-arranged dashes; varieties of *Eugonia quercinaria* (*angularia*), bred; *Abraxas grossulariata* and *Melanippe montanata*.

Mr. Hickling, four specimens of *Sphinx convolvuli*, taken at Sidcup last season.

Mr. Hall, a curious variety of *Abraxas grossulariata*, *Dianthæcia albimacula*, *Toxocampa craccæ*, &c.

Mr. Cooper, fine bred series of *Pericallia syringaria*, *Zonoma porata*, *Z. annulata* (*orbicularia*.)

Messrs. Gaskell, Croker, W. Pearce, Eley, Lowry, Barker and others exhibited cases of British Lepidoptera.

Mr. Billups, drawers of British and Exotic Coleoptera, representing the Geodephaga, Hydradephaga, Staphylinidæ, Lucanidæ, and Scarabæidæ; British Hemiptera, Diptera, and Fossorial Hymenoptera; Ichneumonidæ, and a drawer of gall-makers, their parasites and inquilines. Amongst the

Coleoptera we noticed a fine series of the once rare *Spercheus emarginatus* from West Ham, *Dytiscus lapponicus* from Scotland, *Hydroporus planus*, *Quedius fulvicollis*, and many other rarities. Among the Hemiptera were *Ceraleptus lividus*, *Monanthia costata*, *Salda cocksi*, &c. Among the Heterogyna and Fossorial Hymenoptera were noted the rare *Stenamma nitidulus* and *S. westwoodi*, *Crabro signatus*, *Odynerus reniformis* and its parasite *Elampus panzeri*, *Prosopis dilatata* and others. Among the Ichneumonidæ, *Colpomeria lorigata*, *Chrysis neglecta*, and *C. fulgida*, *Banchus moniliatus*, *Ichneumon gracilentus*, *Thaumatotypus billupsii*, a genus and species new to science, and some eight or nine species of *Pezomachus* new to Britain. A case of wasps' nests from Borneo, and a series of a species of *Lepisma* new to science, taken at Aldgate. Mr. Billups' new style of mounting the Hymenoptera on a slender card, thus enabling the underside to be observed, was very much admired.

Mr. West, of Greenwich, six drawers of Coleoptera, showing the Geodephaga, Dytiscidæ and Phytophaga, the specialities being *Calosoma sycophanta*, *Chlenius schrankii* and *Stenolophus skrimshiranus*.

Mr. Lewcock, a case of the genus *Sylpha*, *Prionus coriarius*, *Saperda carcharias*, and several species of *Necrophorus*.

Mr. Cripps, a number of species of the genus *Donacia*.

Mr. Eley, *Notiophilus rufipes* and a specimen of *Brachycerus apterus*, from the Cape of Good Hope.

Mr. Enock, three cases illustrating the life-history of the British trap-door spider, and a very fine series of photo-micrographs.

Other sections of Natural History comprised exhibits by Messrs. Cook, Dawes, Mackenzie, Step, Rowe, Williams, Billups, W. A. Pearce, A. E. Pearce; and one room was set apart for the demonstration of microscopic exhibits, which were represented by twenty-one instruments lent by members of the Society, including valuable assistance from members of the South London and Quekett Microscopical Societies, and Mr. F. Enock.

It was generally remarked by all present that this was the most successful Annual Exhibition yet held by the South London Entomological and Natural History Society. — W. A. PEARCE and H. W. BARKER, Secretaries, 1, Denman Street, London Bridge, S.E.

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ANOSIA PLEXIPPUS.



IN view of recent occurrences in this country, our readers will probably be interested to have a figure and description of *Anosia plexippus*. The life-size figure given above is from a woodcut, drawn by Mr. Frohawk for the 'Field,' and has been kindly presented to the 'Entomologist' by the editor of that journal.

The following description is taken from 'Synopsis of the described Lepidoptera of North America,' by the late John G. Morris, Smithsonian Institute, Washington, 1862, which is a translation from one by Boisduval:—

The four wings somewhat sinuate, fulvous above, with a rather brilliant reflection; all the wings entirely margined with deep black, having, in fresh specimens, a bluish reflection;

nervures same colour. The summit of the primaries has three oblong, fulvous spots, preceded by eight or ten smaller, white or yellowish white, extending to the middle of the upper edge. Two rows of white spots on the outer borders of all the wings; occasionally the inner row is ferruginous. The fourth nervure of the secondaries has a large black spot or tubercle. The under side presents the same markings as the upper; but the points of the posterior edge are larger, and all white. The ground colour of the secondaries is nankin-yellow, with the nervures slightly bordered with whitish. The emarginations of all the wings white. Body black, with yellowish points on the thorax and breast.

The female has wider nervures, and is destitute of the black tuberculous spot on the secondaries.

Expands four and a half inches.

For records of the occurrence of *Anosia plexippus* in England, see 'Entomologist,' vol. ix. p. 267; vol. xviii. p. 305; vol. xix. p. 12.

It may be well to remind those who have been, or may be, lucky enough to take this addition to the British fauna, that its position in their collections is between the *Apaturidæ* and *Satyridæ*, or immediately before *Melanargia galatea*.

ON A PROBABLE NEW SPECIES IN THE CRAMBIDÆ.

By J. W. TUTT.

IN August, 1883, when collecting in the neighbourhood of Deal, I took one specimen of a *Crambus* which I was unable to determine. It is not in fine condition, but sufficiently so to make out that it has almost the exact markings of *C. geniculeus*, but the fringe is not glossy; it is much larger, and of a dull brown colour. During the following winter I took it, with other specimens, to compare with the insects in the Doubleday collection. As I had taken a great number of *C. geniculeus* and *C. inquinatellus* I was quite certain it was neither of these species; and, on comparing it with the Doubleday insects, I was unable to satisfactorily determine its species.

In size, fringe, and general appearance it comes nearer to *C. contaminellus* than any other British species, but it is a much

narrower winged insect. The markings are decidedly different, and the ground colour is of a very different shade. While working on the same ground quite a fortnight earlier, in 1884, I looked out for the species; and, by dint of hard work and the expenditure of a great amount of time, I succeeded in taking about three dozen, nearly one-half of which were so worn as to be useless for accurate comparison. The others were in beautiful condition, about fourteen males exhibiting a variation in colour from black (two specimens) and rich brown to pale grey; the females being all of a very pale grey, with the anterior wings much elongated, almost pointed. These I compared later with the Doubleday insects, and came to the same conclusion as before, *viz.*, that they could not be *Crambus contaminellus*, which certainly, as far as the Doubleday insects are concerned, seemed very constant in colour and markings.

Some three weeks later (about November or December, 1884) I met Mr. Coverdale at the Bethnal Green Museum, and, strangely enough, among other specimens he had brought for comparison were two males of the identical *Crambus*? These specimens he had taken at Shoburyness the previous July; and, still stranger, one was the undoubtedly rare black form, the other being a grey form. He compared them with the Doubleday insects, noticed several points of difference, and expressed his intention of working up the species next season (1885). I told him I had a series of the same insect from Deal, and invited him to come to my house to see them, which he did some five or six weeks later. We then agreed to try our best to get a long series of the insect; he, at Shoburyness; I, at Deal. Unfortunately circumstances did not permit him to do so (most entomological friends will, I suppose, know by this time that we have lost one of our hardest workers, as he has gone to the United States for an indefinite period), and I was left to my own devices at Deal, obtaining about four or five dozen specimens in a month, only one very dark one occurring amongst them. I have now a fine series of the species (which I shall be glad to show to anyone interested in the matter) of every conceivable shade of colour, between black and pale grey, and varying exceedingly in the intensity of the markings. Mr. Coverdale's collection, which is now in my hands, contains two specimens of undoubted *Crambus contaminellus*, labelled with Mr. Threlfall's name, and coming, I presume, from Lancashire;

and as these agree in every particular, apparently, with the Doubleday series, I have made the following notes on the chief points of difference between the (as I believe) two species:—

1. *C. contaminellus* is the larger insect of the two, and has much broader anterior wings.

2. The tips of the anterior wings in *C. contaminellus* are much less pointed than in those of the specimens from Deal and Shoeburyness.

3. The Deal insects vary much in the intensity of colouring, while *C. contaminellus* is constant.

4. The dark, longitudinal, linear marking or shade occurring in *C. contaminellus*, from the centre of the anterior wings to the thorax, is entirely absent in the other specimens.

5. The two transverse lines crossing the anterior wings of the specimens from Deal are almost precisely the same in shape as in *C. geniculeus*, the outer one nearer the hind margin being rather more elbowed near the costa, and the V mark just above the anal angle being very conspicuous. These lines are differently placed in *C. contaminellus*, and the V mark replaced by a small blotch.

Mr. Threlfall has written me that he takes *Crambus contaminellus*, and that it is remarkably constant in colouring. This would bear out my remark above, and confirms the opinion I had formed from the insects I had seen previously.

One or two points in the habits of the imagines are rather remarkable, and very different from the habits of the other species of the genus *Crambus*. When the specimens of the genus *Crambus* are at rest, I think, in every case that I have noticed, the body is closely appressed to the substance on which it is resting, the wings being folded well over the abdomen. The Deal insects rest with the extreme end of the palpi against the object, the palpi, thorax, and abdomen being in an almost straight line, and inclined to the object on which it is resting at about an angle of 30° ; the wings are folded completely over each other at the end of the body, being drawn out beyond the abdomen almost to a point. The last pair of legs are used as a sort of prop, being passed well back under the abdomen, the abdomen resting in an inclined position on them. The antennæ (of the females, especially) are very brittle, as I found to my cost when setting them.

Mr. Coverdale told me also that in looking over Zeller's collection, belonging (I believe) to Lord Walsingham, that several specimens were mixed up in that collection with the series of *C. contaminellus*; so that it seems the insect has been considerably overlooked on the Continent as well as at home.

My friend, Mr. Tugwell, took a few specimens of the insect some few years back in the same locality as mine came from, and was then convinced that the specimens were not the ordinary form of *Crambus contaminellus*, owing to the peculiar form of the anterior wings of the females.

Should any entomologist have duplicates of *C. contaminellus* (as described in Stainton's 'Manual') to spare, I should be very pleased to make an exchange with him for comparison.

I think it would be very interesting if entomologists, who know well the habits of *Crambus contaminellus*, would point out any points of similarity or difference to those I have mentioned as belonging to the Deal insects.

Mr. Porritt, who has bred *C. contaminellus* this season, tells me that he noticed nothing peculiar about their position at rest; but that he was under the impression that they rested in precisely the same manner as the other members of the genus.

If we can make quite certain of the position of *Crambus contaminellus* at rest, it would of itself make a strong point, independently of the difference in markings.

Although so closely resembling *C. contaminellus* in external appearance, I believe it will be proved to belong to a totally different genus, the structure of the antennæ and palpi differing considerably from the genus *Crambus*.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., Dec. 4, 1885.

LYCÆNA ARGOLUS IN THE MIDLANDS.

By W. HARCOURT BATH.

My note in the January number of the 'Entomologist' respecting the appearance of *Lycæna argiolus* in the Midlands has caused a number of your readers to apply to me for further information relating to the habits of this butterfly. I have penned the following few remarks for publication concerning it,

thinking that they might be interesting to other readers of the magazine.

The best locality for *L. argiolus* in the Midlands, with which I am acquainted, is Sutton Park, situated in the north-west extremity of the county of Warwick. The whole of its contents are estimated at about 2500 acres, not more than a third of which is occupied by woods, the remainder being divided into moorland, meadow, bog and lake. Hollies are the principal trees in all the woods, and in some places they almost rival the oaks in their majestic height, while, on the other hand, there is scarcely any ivy whatever. Now, it is well known that the larva of *L. argiolus* feeds upon the flowers of both holly and ivy where they occur, but whereas ivy is almost entirely absent from Sutton Park, I think we may safely assume this as the reason that there is only one brood in the season of the butterfly there, which fact I stated in the 'Entomologist' (vol. xix., p. 13).

I used formerly to attribute the absence of a second brood to the exposed situation of the locality—Sutton Park being about 600 feet above the level of the sea, and forming part of the highest table-land in England. I have recently, however, had reasons for entirely changing my views on this question. Learning from several sources that only one brood of the butterfly occurs in the year in such a southern locality as the New Forest in Hampshire, and that ivy is also scarce there, I have arrived at the conclusion that it arises from the same cause as in Sutton Park. It will be interesting to know in what other localities *L. argiolus* is single-brooded where ivy is not to be found, and how under other circumstances it maintains itself. When I first commenced my explorations in Sutton Park a few years ago, discovering an absence of ivy I took the hint to search for the larvæ of a supposed second brood on the flowers of the bramble, which comes into full blossom just about the right time, but hitherto I have entirely failed to trace the slightest connection between the two, and know of no one who has done so; it has since, moreover, been proved to be useless, a second brood of the butterfly not having been known to occur here at all. I may mention that bramble is very plentiful in most of the woods, where it composes a thick undergrowth. I have occasionally observed *L. argiolus* settle on the flowers of the mountain ash and crab-apple, but could never discover any signs of larvæ

thereon afterwards. It is, however, very possible that it will eventually accustom itself to the former tree, which is fast multiplying in the woods.

L. argiolus seems once to have enjoyed a much wider range than it does at the present day. There are records of its having been taken in many localities in the Midland Counties of England (Harwich, Worcester and Stafford), where it has not been seen or heard of for many years. This is most probably owing to increased cultivation, most of the woods where holly formerly flourished having been destroyed. This shrub is plentiful in most country lanes in the Midlands, but affords very little food for *L. argiolus*, as, being periodically cropped short, it is seldom allowed to flower.

Ivy on trees is abundant and very luxuriant in many lanes. The butterfly may probably be still lingering in a few unrecorded and secluded spots in the Midlands where holly is abundant. The only other locality that I know of besides Sutton Park is Needwood Forest, near Burton-on-Trent, in East Staffordshire, where I believe the butterfly is tolerably plentiful. I believe there is only one wood there, as in Sutton Park, though I am not quite certain whether ivy is scarce or otherwise there, but I have heard that holly is extremely abundant. Perhaps some readers of the 'Entomologist' will supply us with the necessary information respecting this point. Needwood Forest was once a very large tract of woodland, but is being fast cut up and intersected, and now only a few detached woods remain. It is evident that *L. argiolus* will not remain there much longer.

It is more consoling to know that its extirpation is not likely to take place so rapidly in Sutton Park, which belongs to the Corporation of Sutton Coldfield, who are too fond of their pleasure-ground at present to allow it to be destroyed. It is, however, certainly doomed some day to be converted into coal mines, when, instead of the voice of the cuckoo will be heard the shrill scream of the steam engine and the clanking of the forge.

The woods of Sutton Park have all been artificially made. They were planted probably about five or six centuries ago, so that I may safely assert that the introduction of *L. argiolus* must have happened at a comparatively recent date, at a period when it was plentiful in adjoining districts.

I may add that in seasons when the butterfly is very abundant

it occurs all over the park, and sometimes even on the outskirts, though at other times it is confined to only two or three localities.

The further following remarks respecting its habits, selected from my note book, may also, perhaps, be interesting. I have already, in the 'Entomologist,' (vol. xix., p. 13) given the dates of appearance of the imago, but I may add that it is always regulated by the flowering of the holly, which it closely follows. I have never known it to precede it. The majority of males appear earlier in the spring, the females later on, the latter seldom before most of the males have disappeared. A few males emerge, however, at the same time as the females; likewise a few females are always to be found among the males at the earlier part of the season. Both sexes soon become worn; particularly is this the case in windy weather, when they are blown helplessly against the prickly holly round which they fly. Usually the males are more abundant than the opposite sex in an overwhelming proportion, but last season (1885) proved entirely the opposite, when the former were in the minority.

Most butterflies do not venture forth until the sun has well warmed the atmosphere and absorbed the dews, but the little *L. argiolus* is an exception to this rule. Frequently have I witnessed it flying round the tops of the hollies, even as early as 5.30 in the morning, as soon as the rising sun has cast its rays upon them. It also remains on the wing later in the day than most of its allies, 6.30 p.m. in the month of May being not at all an usual time for it to be seen about in its haunts. The period that it seems to enjoy mostly is just before noon. On dull days *L. argiolus* is very seldom to be seen, but can be taken by beating with a long stick the hollies, under the oily leaves of which it hides itself, and to which it bears a close resemblance in colour when at rest. A striking protective resemblance may also be noticed between the flowers of the holly and the butterfly when it alights upon them, the spots on the under surface of the wings matching the little bunch of blossom.

This insect does not appear to like windy weather, but that does not prevent it flying provided there be any sunshine. Very little wind penetrates into the woods, on account of the thick foliage of the evergreens, but it is noteworthy that the butterfly prefers exposed situations on the outskirts of woods, or in open

spaces. Its flight is rather weak, like most others of the genus, but it is rather difficult to capture, as it generally keeps to the tops of the hollies, where most of the flowers are to be found, only venturing below under exceptional circumstances.

Sutton Coldfield, near Birmingham, January 10, 1886.

[We believe that Mr. J. Jenner Weir was the first to point out that the absence of ivy in flower in any particular neighbourhood, might possibly cause variation of seasonal appearance in *Lycæna argiolus*, in some very terse and thoughtfully considered remarks made before the South London Entomological Society, and as Mr. Weir has been in correspondence with Mr. Bath, he has doubtless assisted the latter in coming to the foregoing conclusions. One remarkable fact mentioned by the writer of the above remarks is his statement that the flowers of bramble and mountain ash would form substitutes for ivy flowers as a pabulum for the larvæ of this species. It will be interesting to know if these plants flower in Sutton Park at a time when they are usually in fruit elsewhere, viz., during the flowering period of *Hedera helix*.—J. T. C.]

AN AFTERNOON AMONG THE BUTTERFLIES OF THURSDAY ISLAND.

By GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., F.R.G.S.

THE following account of an afternoon's collecting among the butterflies of Thursday Island, on the 18th of April, 1885, may perhaps be of interest, as it is a spot, I suspect, which is not often visited by an entomologist.

Thursday Island is the central and smallest of a group of islands lying in Torres Straits, off the North Coast of Australia, and situated between latitude 10°30 and 10°58 south, and 146°6 and 142°20 east longitude. The other islands of the group are Hammond, Goode, Wednesday, Friday, Horn, and Prince of Wales Islands, with numerous small islets. Prince of Wales Island is the largest, being eleven miles long by ten miles broad. They are hilly, and the hills, from the sea, appear to be densely wooded, as are also the valleys between the hills. Most of the islands possess numerous small bays, some of them with an

ample sandy beach, while others are fringed with belts of mangrove bushes. In some of the islands, between the ranges of hills, there are wide plains but thinly wooded with *Eucalypti*, and, after the rainy season, covered with high grass. Springs of water are to be found on nearly all the islands throughout the year, and after the rains there is generally a profusion in the gullies and water-holes. Thursday Island, being so small, is but poorly provided, and the inhabitants store up rain-water in tanks to meet their necessities during the dry season, the water in the water-holes being unfit for human consumption.

Thursday Island is one mile and a half long by about three-quarters of a mile wide, and has a range of hills running half-way through it in a north-easterly direction, divided by a moderately broad valley crossing the island from north to south, and beyond this again there is a range of hills in the north-east corner of the island, and another range in the south-east corner. The highest point is 374 feet high. The settlement is situated upon Vivien Point, the south-west extremity of the island, and extends along the beach for about half a mile from thence. The whole island is surrounded by a coral fringe reef.

After lunch I went on shore with three of my messmates, Lieutenants Ommanney and Allenby, and Mr. Hunter, midshipman. The two former I provided with nets and boxes, as they were anxious to help me, as they said, to complete my collection of the Australian butterflies, as this would be the last opportunity we should have of landing in Australia. We landed on the beach a little to the north-east of the settlement, and walked to the valley which intersects the island, and across this to a range of hills which lie in the north-east corner, and whose highest point, Rose Hill, is 223 feet. The valley was sparsely clothed with trees, the chief of them being *Eucalypti*, *Casuarina*, *Banksia*, *Persoonia*, &c. Grass was abundant everywhere, and in some places, especially at the edge of the forest, was breast high. There were also a few small *Acacia* and *Cassia* bushes, and some others I am unacquainted with; and here and there patches of vetches and other leguminose plants. The ground in many places was thickly strewn with volcanic blocks of stone, and these, hidden among the grass, made walking dangerous and unpleasant, and running almost out of the question. Most conspicuous objects in this valley were the cone-shaped or

castellated dwellings of the *Termites*. Some of them were from ten to twelve feet high, and eight or ten feet in circumference. They were evidently all inhabited, for several pinnacles we knocked off were swarming with ants. The galleries were full of vegetable matter, which apparently consisted of a mixture of bits of grass, grass-seeds, and wood-dust. The nests were composed of agglutinated sand, and were as hard as sandstone itself. It is astonishing how these little creatures can construct such wonderful dwellings. They must be several years raising one to a height of ten feet; for besides these large dwellings there were a number of smaller ones in course of erection, some only a few inches above the surface of the ground, but they had all an old weather-beaten appearance. The galleries looked as if they had been lined with a dark reddish brown shining substance, though this might have been produced by the traffic of such multitudes of insects constantly running to and fro.

The first butterflies we saw were *Junonia orithya*, which were fond of settling on bare patches on the ground, but they were so wary that they were very difficult to catch. There was a strong breeze blowing, and directly they took wing they were carried off at a great pace. Some of the *Eucalyptus* trees were in flower, and proved attractive to several species of butterflies, notably *Papilio polydorus* and *Eurycyus cressida*, butterflies which are very similar in habits and appearance when on the wing. One evidently mimics the other, and they fly in a slow floating manner, and are seemingly easy to catch. However, to-day, in this particular locality, they were flying high out of reach among the topmost branches of the trees; occasionally one descended and crossed the opening to another tree. This afforded a chance, and a rush was made after it; and it was amusing to watch how easily it avoided the frantic strokes of the net, and reached its goal in perfect safety, while its would-be captor stood still beneath the tree, hot, panting, and probably with bruised shins, and, in bad French, blessed *polydorus*, who was again feasting unconcernedly aloft. By the way, has anyone noticed how closely *Papilio anactus* mimics *Acræa andromacha* in its flight and general appearance? I have, upon several occasions, mistaken the two; the former flying in the weak straight manner of the latter, and the colours and pattern of both somewhat resembling each other. Among the grass were several species of *Terias*,

Satyridæ, Lycænidæ, and Hesperiidæ; and also a few Noctuæ, Geometræ, and Pyrales; but on the whole Micro-Lepidoptera were far from plentiful.

As soon as we reached the edge of the forest the aspect of affairs changed, and butterflies became decidedly more numerous. Here we separated, my companions keeping outside, while I scrambled up the side of the hill, until I got well within the shelter and shade of the trees. It was difficult walking, for the ground was covered with large loose stones, which were more or less hidden by the undergrowth, so that it was necessary to be careful and look where one was going to. Once or twice I narrowly escaped a fall as I was eagerly pursuing some attractive species, and usually, upon these occasions, the insect was lost; and I found it a much better plan to walk along quietly, or stop altogether when I reached a likely-looking spot, for butterflies often come quite close if one keeps perfectly still. The most abundant species in the forest were *Papilio polydorus*, *Hypolimnas alimena*, and *Euplœa sylvester*; but perhaps I had better give a list of the species seen and captured, with remarks thereon, instead of a rambling disconnected account.*

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LOCAL FAUNA.—Might I here suggest that it would be well if British entomologists were a little more systematic in their work? I have recently had my attention specially drawn to the insect fauna of Kent, and have been desirous of ascertaining what was on record for that county. On examining the records I find, not a list of the Kentish Lepidoptera, Coleoptera, or any other, including the known forms up to the date of publication, not even detailed local lists, but instead of this I have to deal with innumerable short notes spread throughout many periodicals and books, each one being a record of an occurrence of some "good" species, or an account of a successful day's collecting, but rarely with any reference to previous literature on the subject. Frequently, also, the localities are vague, or are not

* From Proc. Linn. Soc., New South Wales. Communicated by the Author.

stated. The result of this want of co-operation and of knowledge of the previous records is naturally that many facts get recorded twice or more; and that, notwithstanding a vast and comprehensive literature, it is not without the greatest difficulty that the actual nature of the known fauna can be ascertained. Cannot the southern entomologists (for they, of all, are perhaps the least systematic) unite and form a society, something on the lines of the Yorkshire Naturalists' Union, which shall devote itself to the collection and arranging of the published records relating to the South of England, and to the ascertaining and publishing of new facts, so that its members may see clearly what has been done and what has yet to be done each one in his own district, and may apply himself to the good work in an intelligent and enterprising manner?—T. D. A. COCKERELL; 51, Woodstock Road, Bedford Park, W., Dec. 16, 1885.

[The South London Entomological Society is engaged upon the compilation of a list of the insect fauna of Kent and other southern counties. Mr. Cockerell may obtain information on the subject by writing to the Secretary, 1 Denman Street, London Bridge, S.E.—J. T. C.]

NOTES FROM CHISLEHURST.—On September 30th I found a specimen of *Xanthia fulvago* (cerago) at rest on a rubbish-heap. The bright tints of this moth are probably assumed as a protection, on account of their resemblance to the colour of some autumnal leaves; the warm brown and yellow tints of autumnal moths generally are very noticeable. On Nov. 6th a specimen of *Chesias spartiata* (apparently new to the Chislehurst district) came to light, as also a specimen of the variety of *Hybernia defoliaria* represented in Newman's second figure (Brit. Moths, p. 105): would it not be more convenient to call this variety *suffusa*, a name which explains itself? for it does not seem to have been hitherto named, though it is as distinct as many other similar varieties. On Nov. 11th I took a typical example of *Hybernia defoliaria* at light.—T. D. A. COCKERELL; Bedford Park, W., December, 1885.

LEPIDOPTERA NEAR SOUTHAMPTON, &c.—The limited amount of entomological work I have been able to indulge in during the past season has not revealed any great abundance of insect life, and very few rarities have fallen to my lot. A few moths

emerged from the pupæ in my breeding-cages during the spring, including *Drepana lacertinaria*, *Numeria pulveraria*, *Zonosoma pendularia*, and *Anarta myrtilli*. A couple of excursions during the warm weather at the commencement of June, in company with my friend Mr. W. D. Lindley, from Oxford, to Dychwood Forest and Streatley, resulted in the capture of *Thecla rubi*, *Nemeobius lucina*, *Lycæna astrarche* (*agestis*), *Melitæa aurinia* (*artemis*), *Strenia clathrata*, *Euclidia mi* and *E. glyphica*, and several others. *Melitæa aurinia*, so far from inhabiting a damp spot, occurred on the summit of the Streatley Downs. In this neighbourhood several insects, which usually appear in plenty, were very seldom to be seen, notably *Lymanitis sibylla*, *Argynnis paphia* and *A. adippe*. The reason occasionally alleged to explain the disappearance of insects, based on the numbers of entomologists who catch all they find, cannot apply here, for insect collectors are very few. As if to compensate for the scarcity of these insects *Iodis lactearia* and *Cabera pusaria* were perfect plagues in all the woods in which I collected. At Sandown, Isle of Wight, it gave me great pleasure to renew my acquaintance with the capricious *Colias edusa*; it occurred in some plenty, but within a very limited range, in a clover field beyond Red Cliff Fort, and I was somewhat disappointed in my careful search for *Lycæna bellargus* (*adonis*), which was only with great difficulty discovered amongst the swarms of *Lycæna corydon* and *L. icarus* on the chalk. Although last year I met with some success amongst the moths at Sandown, this year my captures were all more or less common insects: *Lithosia lurideola* (*complanula*), *Aspilates citraria*, *Eubolia bipunctata*, *Acidalia dimidiata* (*scutulata*), *Gnophos obscurata*, *Xylophasia lithoxylea*, *Leucania pallens*, *Miana furuncula*, and many others. With so many records of *Sphinx convolvuli* from all parts of the country, I should indeed be disappointed if I had not succeeded in obtaining an example. The only one that came to me was found by my sister here at Millbrook, on a window. A larva of *Acherontia atropos* was also given me. — H. E. U. BULL; January 4, 1886.

MACRO-LEPIDOPTERA NEAR WESTON-SUPER-MARE.—The past season has certainly been a better one for many insects than we have had for some years, at any rate in this neighbourhood. Entomologists, especially if they have any idea of visiting this

pleasant watering-place, may like to hear what was done last year with Macro-Lepidoptera by one who does not profess to have worked the place at all thoroughly. *Amphidasys strataria* (*prodromaria*) was the first fruits of zeal, followed in April by *Cidaria miata* (at Uphill) and *Xylocampa areola* (*lithoriza*). The latter laid eggs, and I found the larvæ very easy to rear. The month of May brought out *Anticlea nigrofasciata* (*derivata*), *Tephrosia biundularia* (or *crepuscularia*, for I do not think the two species can be definitely distinguished), *Larentia viretata*, and plenty of *Nola confusalis* at rest on tree-trunks; to which must be added larvæ of *Thera variata*, *T. firmata*, *Ellopiæ prosapiaria* (*fasciaria*), *Pæcilocampa populi*, *Tæniocampa munda*, &c. As summer came on, I took *Smerinthus tiliæ* (in the town), *Boarmia abietaria*, *Asthena blomeraria*, *Acidalia remutata*, *Cidaria suffumata* (very late), *C. dotata*, *Eurymene dolabraria*, *Melanippe albicillata*, *Emmelesia affinitata*, *Cidaria silaceata*, *C. prunata*, and others; and later on the following species were observed: *Triphæna fimbria*, *Melanippe galiata*, *Eubolia cervinata*, *Mesotype virgata* (*lineolata*), *Epione apiciaria*, and *Agrotis saucia*. *Agrotis vestigialis* (*valligera*), *A. tritici*, and *A. puta* are all common, and I have taken one *A. cinerea*. At ivy there were *Anchocelis lunosa*, *Epunda lichenea*, *Agrotis suffusa*, *Orthosia macilenta*, *Xylina socia* (*petrificata*), *Polia flavicincta*, &c. At least fourteen species of *Eupitheciæ* occur here, including *E. abbreviata*, *E. dodoneata*, *E. lariciata*, *E. albipunctata* (at Hutton), *E. indigata* (single-brooded here), and *E. isogrammata*, which feeds exclusively on a small white-flowered clematis in gardens, the wild clematis not growing in the district. Among the best larvæ which I have taken last year were three *Notodonta chaonia*, one *Asteroscopus sphinx* (*cassinea*), three *Eugonia juscantaria*, one *E. erosaria*, *Notodonta dictæoides*, *Asphalia ridens*, and, not least, five larvæ of *Acronycta alni*, three of which I took off one small alder tree growing in the street; the two others were found within a week of the same time, a mile or more away. But perhaps the best take of all this year was a fine specimen of *Heliothis armigera*, which I captured on ragwort bloom on the coast, August 29th. I might add many more species to this list, as I have in three years taken about 270 species of the Macros here without really working for them, including 30 of the Diurni.—(Rev.) G. A. SMALLWOOD; Southside, Weston-super-mare, January, 1886.

NOTES ON LEPIDOPTERA IN 1885.—The following extracts from my notes for 1885 may be thought worth notice. The first *Pieris* of the season I found on March 15th (a bright warm day), it was a *P. rapæ* (male). On March 22nd there were several inches of snow on the ground. I saw no other *Pieris* till March 30th, and after that not till April 12th. With respect to sugaring, my experience, so far as it goes, confirms that of Mr. Kane (Entom. xix. 1). I had no luck at all in the spring, and attributed it to the northerly winds and dry weather. I noticed that when *Arctia caia* was fed on lettuce the 'frass' was very conspicuous, being as large as small peas, very damp, and sometimes greenish in colour. It was in striking contrast to that of other larvæ of the same species, fed on less succulent and palatable food. *Hepialus lupulinus* was very abundant about here during June; several specimens were found in the house, and in the fields they literally swarmed. *Acronycta psi* appeared to be fairly plentiful. I have noticed that *Boarmia gemmaria* (*rhomboidaria*) and *Leucania pallens* (or an allied species)—but especially the first—are constantly to be found in the house. I presume that they are attracted by the light at night time. This autumn I found specimens of *Phlogophora meticulosa* as late as November 2nd and 10th. I have had a very curious experience with *Orgyia antiqua*. A larva of this was found on a geranium in our garden on September 16th; it pupated almost immediately, and the moth emerged about the middle of November, being either four months late or seven months early. It is a perfect specimen (male), but rather smaller, and of a deeper colour than the type. I am somewhat puzzled to account for this behaviour. As to larvæ, that of *A. psi* seems to have been abundant this autumn. Can anyone tell me if there are two broods of this? for I had one larva of it pupate by August 8th, and yet found others still in the larval state in October. Larvæ of *Phalera bucephala* have been in extraordinary abundance here, but they seemed to be very sickly, and the larger part of those that I collected died before pupating. I have noticed that larvæ of *A. psi* seem peculiarly liable to attacks of ichneumons. As to *Sphinx convolvuli*, a young friend brought me a specimen which had been found on the grass at Broxbourne on September 1st.—F. H. PERRY COSTE; 15, Bruce Grove, Tottenham, January 10, 1886.

PIERIS RAPE AS A COLONIST.—Dr. John Hamilton, in a notice of the insects occurring at Brigantine Beach, New Jersey (Canad. Entom. xvii. 202) says:—" *Pieris rapæ*, Lin., is abundant, though cabbage is little cultivated. I found over a dozen of the pupæ on the beach under a small board, and, on searching for the food plant, discovered the larvæ had fed on the *Cakile americana*—a curious maritime plant, which, though belonging to the Cruciferae is very remote from the cabbage."—[J. T. C.]

VANESSA C-ALBUM NEAR WELCHPOOL.—Perhaps it is of interest to know that *Vanessa C-album* has been captured here several times this year. About September 20th a friend brought me one which he had captured on a cold windy night in a sheltered ditch. I took one early in October flying over the flowers of Alyssum, and my brother saw another.—STANLEY P. JONES; Westwood, Welchpool, December 5th, 1885.

MELITEA AURINIA IN SHROPSHIRE.—On May 8th, 1884, I received from Church Stretton, in Shropshire, eleven dozen of *M. aurinia* (*artemis*) of various sizes, many about full-fed. The Rev. R. J. Buddicombe, who kindly sent me them, informed me that the roads and fields swarmed with them, and had swarmed for at least five weeks, but he did not think the space of ground they infested was very large. I supplied the larvæ with broad and narrow-leaved plantain, germander, primrose and violet leaves, on none of which they attempted to feed, so then gave them sprays of honeysuckle, which they immediately began to devour and thrive upon well. The first changed to a pupa on May 12th, followed by others pupating every day for over a month. The first imago emerged on June 8th, others emerging daily for about a month, and by the middle of July ninety had emerged in perfect condition; they varied much in size and colour. The average time they remained in the pupal state was twenty-five days. Only five out of the eleven dozen larvæ had ichneumons. I mention this as Newman, in his 'British Butterflies,' remarks that nine out of every ten of the larvæ of *M. aurinia* under his observation were infested with ichneumons. The larvæ of ichneumon emerged from the full-fed *M. aurinia* larvæ, and spun little whitish cocoons round their victims, which produced the perfect ichneumons on June 14th, 1884. Is honey-suckle an usual food-plant of *M. aurinia*?—F. W. FROHAWK; Park Place, Eltham, Kent, November, 1885.

CHÆROCAMPA CELERIO IN SUFFOLK.—I can add one more to your numerous records of the occurrence of this species, as the Rev. W. M. Hind, LL.D., the Rector of Honington, near Bury St. Edmunds, informs me that one was taken on September 19th in that Parish.—E. N. BLOOMFIELD; Guestling, January 13th, 1886.

ACHERONTIA ATROPOS AND VANESSA IO.—Unusually abundant this year in the midlands.—W. HARCOURT BATH; Birmingham, November, 1885.

NOTODONTA DICTÆA IN AUTUMN.—On July 26th of this year I found a full-fed larva of *Notodonta dictæa*. On the following day it spun a cocoon between some poplar leaves; and on Saturday, August 22nd, the imago appeared. In Newman's 'British Moths,' May is given as the date for the appearance of the moth, and I think it rather strange that this specimen should have emerged in August when it was not forced.—G. H. GRIFFITH; N. H. S. United Services College, Westward Ho! North Devon, November, 1885.

[This is not an uncommon occurrence, both *N. dictæa* and *N. dictæoides* being frequently taken at light in the autumn, especially at suburban lamps.—ED.]

CARADRINA AMBIGUA AT DEAL.—I have great pleasure in recording the occurrence (last August) of a specimen of *Caradrina ambigua* at Deal, thus adding another to the already long list of rarities captured in that district. Can any reader of the Entomologist inform me whether the females of this species have white hind wings or not? If so, I shall be greatly obliged.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., January 15, 1886.

URTICATION BY BOMBYX RUBI.—I have long noticed the urtication of the larvæ of *Bombyx rubi*. When I was a child I never could handle them without getting small white blisters like nettle-stings, but I found it was only the short hairs which stung; they came off and remained sticking in my hands, while the long hairs seemed quite harmless. I have observed the same with *B. quercus*, but in a lesser degree.—M. S. JENKYNs; Riverside, East Molesey, January, 1886.

VARIETY OF CABERA PUSARIA.—On visiting my pupa room early on the morning of June 6th last a recently-emerged Geometer,

sitting on the glass of one of the cages, so utterly puzzled me that I at first thought it must be a new species. It turned out to be a most beautiful and striking variety of *C. pusaria*, with no white about it except on the fringes and thorax. I feel inclined to call the ground colour black, but I suppose it should rather be termed sooty. The transverse lines are traceable both on the primaries and secondaries. I beat the larva from *Alnus glutinosa* in the autumn of 1884. — GILBERT H. RAYNOR; Shenfield, Brentwood, January 16, 1886.

VARIETY OF *ABRAXAS GROSSULARIATA*.—I enclose an accurate drawing of a very beautiful variety of *Abraxas grossulariata*, female, which has just come into my possession. The figure is the natural size. The thorax and abdomen are orange, devoid of any markings whatever. The light band across the upper wings is dirty yellow. The dark markings are black. The remaining colour is pure white. The marginal markings are hardly visible. It will be observed that the right half differs from the left, the former having twelve black spots, the latter only eight. The band on the right upper wing is also broader, and differently shaped. This very beautiful specimen was captured in August, 1885, at Combe Dingle, in this county, by Master F. S. Coles.—J. GREENE; Rostrevor, Clifton.



HYPsipETES TRIFASCIATA NOT DOUBLE-BROODED.—In the *Entomologist*, vol. xviii, p. 322, I am made to say that *H. trifasciata* (*impluviata*) is double-brooded. This is a mistake, and I intended the remark to apply to *Thera variata*. I am not aware that *H. trifasciata* has a second brood.—J. B. HODGKINSON; Preston, Lancashire, December, 1885.

ABSENCE OF *CIDARIA RETICULATA*.—I took two journeys last season for *Cidaria reticulata*, and although I made most careful search for the larvæ I found no trace of it, or, indeed, of any of the balsam seeds being eaten. The plant was last year in plenty, and remained in many instances in flower so late as the middle of October.—J. B. HODGKINSON; Preston, Lancashire.

NEPTICULA MYRTILLELLA FEEDING ON *POLYPODY*.—When collecting the larvæ of *Nepticula myrtillella*, in the locality where I

have taken it for years past at Windermere, I found the larvæ of this species also mining the leaves of a small fern (*Polypodium*), the fronds of which were mixed with the *Vaccinium*, the two plants growing side by side.—J. B. HODGKINSON; Preston, Lancashire, January 6, 1886.

LEPIDOPTEROUS EGG-PARASITES.—I thought the seven parasites which I bred from a single egg of *Bombyx trifolii* was rather startling; but I should not have been so startled if I had read the paper, written by Mrs. A. K. Dimmock, Cambridge, Mass., and published in 'Psyche' for April—June, 1885, p. 282. The author says:—"The egg of *S. excaecatus* often harbours very minute hymenopterous parasites; more than thirty of these Hymenoptera sometimes emerge from a single egg of *Smerinthus*, a fact that will give an idea of their microscopical minuteness." The killing and setting of *Telenomus phalænarum* from *B. trifolii* tried my patience; what would it have been with those mentioned above.—G. C. BIGNELL; Stonehouse, Plymouth, Dec. 10, 1885.

STRIDULATION OF PUPÆ OF *ACHERONTIA ATROPOS*.—Having had last season a number of the larvæ and pupæ of *Acherontia atropos*, I paid some attention to the manner in which is produced the squeaking noise in the larva, pupa and imago stages of its life. I only heard the snapping sound made by the larva on two or three occasions, and I believe it is produced by gnashing the mandible. The sound produced by the pupa I heard on December 17th by pressing the thorax of a doubtful pupa. Thinking the moth could not release itself from the pupa case, I removed the covering from the eyes and tongue. The sound was then repeated, and by watching I found that the extended tongue was raised in the middle in the form of a bow, and divided at the same time from the mouth nearly to the lip, and then being quickly depressed and closed, the sound appeared to be produced by the junction of the two tubes. I think that the sound made by the imago is produced in a similar manner with the tongue rolled. I should like some other entomologist to experiment with the pupa as I did, and let us know the result.—W. T. PEARCE; 42, St. John Street, Buckland, Portsmouth, Dec. 26th.

SOUND PRODUCED DURING FLIGHT OF SPHINGIDÆ.—I am very much inclined to believe all the Sphingidæ are capable of producing a more or less audible sound. I particularly noticed a

fine female *Sphinx ligustri* one evening last summer, which had apparently been ovipositing on a privet hedge before I alarmed it. As I stood, the top of the hedge—a rough untrimmed one—was just about level with my ears. Instead of flying away when disturbed, the moth circled round repeatedly just above my head, and every time she came over the hedge in her wheelings she hovered above the spot where she seemed to have been depositing her eggs, and remained poised in the air for several seconds, the rapid vibration of her wings producing a loud humming noise so distinctly audible that I stood still to listen to it. I remained motionless close to the hedge for several minutes, during the whole of which time the moth continued her wheeling flight. She seemed to be angry at my presence, and the noise she made was very similar to that of an enraged bee, but louder. As I persisted in watching her the sound became shriller in tone, evidently occasioned by vibrating the wings with greater rapidity as excitement increased, until at length I began to wonder whether it was indeed a *Sphinx ligustri*, and therefore captured it with my net to satisfy myself.—ALBERT H. WATERS; Mill Road, Cambridge, January, 1886.

URTICATION BY LARVÆ OF BOMBYX RUBI.—In a note under this heading, which appeared in the December number of the 'Entomologist' (xviii. 324), the writer says, "This is the first case I have noticed of this species causing this irritation." I may mention that a similar case came under my notice last summer. My sister and a friend brought me a large number of these larvæ, which they came across while hunting for ferns in Glen Lean, Argyllshire. The effect caused by the hairs of the larvæ upon their hands was as though they had been stung by nettles, and lasted for several days. This is the more remarkable considering that both the young ladies wore thick driving-gloves at the time. I have never felt any inconvenience myself after handling the larvæ of this species; though I have noticed a slight irritation after handling the cocoons of *B. quercus*.—FRANK R. JEX LONG; 11, Donne Terrace, Kelvinside, Glasgow, Dec., 1885.

MOTH TRAP.—If any of your readers possess such a trap as is recommended on p. 36 of 'The Field Naturalists' Handbook,' I should be pleased to hear of their experiences with it. I have tried mine, which is made exactly according to the one depicted in the above-mentioned book, wet or fine, and with its front

turned in divers directions, almost every night from June to October. The result has been *nil*, with the exception, I believe, of one solitary gnat. Perhaps I have made some mistake in the management of it; if so, I should only be too glad to know how to rectify it. I do not wish to detract from the trap any merits there may be; but having, so far, met with no success, and being at a loss to understand the reason (having a powerful reflector and lamp, and setting the trap on a wall about twelve feet high, overlooking my father's grounds, and one would think in a very good locality), I venture to write to see if any of your numerous readers have met with any success in using it; and if so, how?—A. E. HALL; Norbury, Pitsmoor, Sheffield.

AN ATTRACTION FOR BUTTERFLIES.—Two clumps of *Sedum telephium* in my garden have proved a great attraction to the Vanessidæ during the month of August. Although a small garden, within a short distance of paved streets, I have seen at one time one *V. cardui*, three *V. atalanta*, and half a dozen *V. urticæ* on the same plant.—H. MILLER; Ipswich.

AN ENTOMOLOGICAL RIP VAN WINKLE.—I am in a fix among my captures of last year; I have a few species of Tortrices, Tineæ, &c., for which I can find no description of in the books I have, *viz.*, 'Stainton's Manual,'—to my way of thinking the best book ever written to name species by, the "tables" and short pithy descriptions are so much to the point,—Wilkinson's 'Tortrices,' Newman's 'Moths,' and Stainton's 'Natural History of the Tineinæ,'—thirteen vols. of this last, and I much fear we have had the last of that most valuable work, for it is now over seven years since I received my last vol. (alas! that it is so),—and the 'Annual,' too, has also stopped. Pray forgive my lamenting, but I feel something like an entomological Rip van Winkle, for I have been asleep, so far as insects are concerned, these last five and twenty years, and on waking up I find things changed indeed,—new names to old familiar species, others have got their own again, and—horror of horrors—black pins! They are ugly, have bad points that are weak and turn up, or very thick and blunt. Fancy pinning *Nepticula* and such like with them! No. 20 black pin has a point as thick as a No. 1, and then their temper—they have none; but they have done something towards spoiling mine! Then an exchange list, almost

on the lines of an "Exchange and Mart." Very little of the good old give-and-take system left, but too much barter, and the sending of old, mity, badly worn and badly set insects, as if some people thought that anything will do to exchange. I suppose, however, we must take the world as it comes; but I am proud to find there are many good men and true to make up for the mean and greedy, and those of my old, old friends whom I can find are still alive are the truest of all! I fear I stray from my original intentions in writing; it is that we sadly want a supplementary Manual to follow up where Stainton left off, with descriptions of the new species since that time. Surely there are men willing and able to supply this want. I suppose there are descriptions of these new species somewhere in the magazines, and in 'Proceedings,' but how is one like myself to get at them? and worse still is it for beginners.—W. FARREN; 14, Kings Parade, Cambridge, December 30, 1885.

COLLECTION OF ECONOMIC ENTOMOLOGY.—Miss E. A. Ormerod writes as follows in the Report of the Consulting Entomologist of the Royal Agricultural Society for 1885:—"By desire of the Lords of the Council of Education, I have undertaken to superintend (as far as my other duties allow) the re-arrangement of a portion of the valuable collection illustrative of injurious insects and their ravages, known as the 'Collection of Economic Entomology' of South Kensington, with the view of making it of practical service to farmers and all interested in the matter. By placing the pests of the various crops, cattle, &c., respectively together in cases distinguished by the English name of the crop or animal attacked, I believe the large collection will become of great public service, and I may add that a portion of the rest of the work is in the skilled hands of Professor Westwood."

LEPIDOPTERA OF SUFFOLK.—For some years past I have been collecting information towards a list of the Lepidoptera of Suffolk, and hope to print it shortly. I should be greatly obliged if any of your readers could supply me with lists of recent captures made by them in that county.—E. N. BLOOMFIELD; Guestling Rectory, Hastings, January 13, 1886.

ERRATA.—Entom. xix. p. 14, line 4, for Palladolid read Valladolid; p. 19, line 2, for 1885 read 1855; p. 21, line 10, for Satyridæ read Salatura.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *January 20th, Anniversary Meeting.*—Robert McLachlan, F.R.S., President, in the Chair. An abstract of the Treasurer's accounts was read by Mr. Stainton, one of the Auditors; and the Secretary read the Report of the Council. The following gentlemen were then elected as the Council for 1886:—President, Robert McLachlan, F.R.S.; Treasurer, Edward Saunders, F.L.S.; Secretaries, Herbert Goss, F.L.S., and William Ward Fowler, M.A., F.L.S.; Librarian, Ferdinand Grut, F.L.S. Other members of Council, T. R. Billups, Edward A. Fitch, F.L.S., F. DuCane Godman, M.A., F.R.S., W. F. Kirby, E. B. Poulton, M.A., F.G.S., H. T. Stainton, F.R.S., Samuel Stevens, F.L.S., and J. Jenner Weir, F.L.S., F.Z.S. The President delivered an address, and a vote of thanks to him was moved by Mr. Stainton, and seconded by Mr. Pascoe, and the President then replied. A vote of thanks to the officers was moved by Mr. Dunning and seconded by Mr. Distant, and Messrs. Saunders, Fitch, Kirby and Grut replied.—H. Goss.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 21st, 1886.*—R. Adkin, F.E.S., President, in the Chair. Mr. Frohawk exhibited specimens of the curious ichneumon *Alysia manducator*, Panz., bred from the coleopteron *Creophilus maxillosus*, L. Mr. Billups exhibited male and female specimens of *Sirex gigas*, L., belonging to the family Siricidæ, and remarked that the larvæ were very destructive to wood, more especially fir plantations, and cited many instances to show the great rapacity and strength of the mandibles of these destructive creatures. This gentleman also exhibited specimens of the ichneumon *Rhyssa persuasoria*, a species parasitic on the *Sirex*. Mr. South exhibited specimens of *Noctua castanea* (*neglecta*) from the New Forest and two localities in Perthshire, and said those from the New Forest were gray, with an ochreous tinge, and were the true *neglecta*; whilst those from Perthshire were either gray with a reddish tinge, or of a decided chestnut colour, the chestnut-coloured specimens being the *castanea* of Esper, and the reddish tinged gray examples connecting the true-named forms. Other interesting exhibitions and remarks were made by various members.—H. W. BARKER, W. A. PEARCE.

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EDITORIAL ANNOUNCEMENT.

It is with much pleasure that I have to announce, with the hearty concurrence of my colleagues, the addition of the name of Mr. Richard South, F.E.S., to the list of entomologists who have so long and so kindly acted as a committee of aid and reference, during the period I have held the position of editor of this Magazine.

This being a fitting occasion, I should fail in my obligation to those gentlemen, if I neglected to avail myself of the opportunity to express my personal thanks to them, for the manner in which they have at all times readily given that cordial support which has contributed so largely to the continued and increasing success of the 'Entomologist.' I would further express my gratification, that although we have been thus associated for nearly ten years, until now one change only has occurred in our editorial staff, namely, the loss, by death, of our much esteemed friend, the late Frederick Smith.

To introduce Mr. Richard South to our readers would be an act of supererogation on my part. He is so well known, through his independent and careful investigations into the natural history of certain groups of European insects, and the excellent work he has done in the cause of systematic nomenclature of the British Lepidoptera, that the acquisition will be welcomed as a guarantee for further interesting communications from his pen.

I have also to thank our very numerous contributors for their substantial assistance, and to remind others who write less

frequently, that even small records, or notes, are always of interest to some: while their publication frequently develops friendly controversy, from which facts of value may be elicited, tending towards an increased knowledge of the economy of the great class Insecta.

JOHN T. CARRINGTON.

Savage Club, Savoy, London, W.C.,
February, 1886.

LYCÆNA ARGIOLUS BOTH MONOGONEUTIC AND
DIGONEUTIC.

BY J. JENNER WEIR, F.L.S., F.Z.S., V.-P.E.S.

Lycæna argiolus is, to my mind, the most interesting butterfly we find in England; for many years I have paid great attention to the habits of the species, and my last communication on the subject may be found in the 'Entomologist' for 1884, pages 193 to 197.

Mr. Harcourt Bath's note (Entom. 13) was very welcome to me, confirming, as it did, my own experience, that where the holly alone was found, *L. argiolus* was single-brooded or monogoneutic, and that when the insect fed as a larva upon the ivy alone, or perhaps upon both holly and ivy, it becomes double-brooded or digoneutic. I wrote to Mr. Harcourt Bath, and, finding from him that he proposed to send a further account to the 'Entomologist,' I waited till he had done so before again taking up the matter.

In the case of *Pieris napi*, and in the American species closely allied to *L. argiolus*, whether they are monogoneutic or digoneutic appears to depend entirely upon the length and warmth of the summer months in their habitats; this fact was particularly dwelt upon by me in my communication to the 'Entomologist' in 1884 (Entom. xvii. 193), so far as the latter species was concerned; with regard to the former species, *Pieris napi*, v. *bryoniæ*, the alpine form, is single-brooded, and in Lapland and the Arctic regions it is also monogoneutic. All this is clearly understandable on Weisman's view—that *Bryoniæ* is the original form, and that by the amelioration of the climate a summer brood has been interpolated.

But this explanation will not meet the case of *L. argiolus*

under consideration; it is here no question of climate, but apparently simply of food; the problem has for a long time occupied my thoughts, and I venture to offer an explanation. An insect feeding either on the bloom, buds, or tender shoots of the holly only must be single-brooded, as that tree makes its growth in the early months of the year; and the hard leaves, which alone would be on the tree at the period of the summer emergence in July and August, would probably be not succulent enough for the small larvæ then produced from the ova.

The ivy, on the other hand, makes shoots not only in the spring, but during the whole of summer; and even as late as October growth has not ceased, as I have found to be the case with some forty varieties of ivy I have cultivated for more than thirty years.

I believe that the holly and ivy are considered to belong to the remains of the old miocene flora, and it is probable that the ancestors of *L. argiolus* may have fed on the trees from which these two species have been respectively phylogenetically derived. However this may be, I think it may be taken for granted that at one time *L. argiolus* was single-brooded, and that the summer brood has been acquired, as in the case of *Pieris napi* before-mentioned.

Now, what would occur if *Pieris napi* was deprived of all food for the larvæ produced from the ova of the second emergence of the imago? Many would say the species would cease to exist. I say no, it would not, for this reason: all who have had to do with double-brooded insects know perfectly well that many of the pupæ of the summer brood do not produce their imagines, say, in July or August, but, on the contrary, they remain in the pupa-state till the proper period of emergence in the next spring arrives. This is certainly true of *P. napi*, and the fact is adverted to by Weisman.

In this very genus *Lycæna* I have thought that *L. bellargus*, although double-brooded, is very much rarer on the wing in July and August than in June, and that probably many pass the winter in the pupal as well as in the larval state. I do not feel quite certain that the same race of *L. argiolus* feeds both on the holly and ivy; it is more probable that we have two races—one monogoneutic, confined to the holly, and the other digoneutic, feeding on the ivy. Both the late Mr. Buckler and

Mr. Hellins found that in captivity the larvæ eating the ivy were more advanced than those feeding on the holly, although from the eggs of the same female (Ent. Mo. Mag. xiii. 29); this fact is very remarkable, for it would seem that those which must be single-brooded, if holly-feeders only, come more slowly to maturity than those which might be double-brooded, the ivy-feeders.

To sum up: my hypothesis is that *L. argiolus* is digoneutic when feeding on the ivy, even if entirely confined to that plant; that it is monogoneutic when feeding on the holly alone, and that even if it had become digoneutic, the failure of a supply of food for the larvæ produced by the imagines of the summer emergence would not necessarily destroy the species, inasmuch as some of the pupæ would remain over till the next spring before their emergence took place, and a gradual elimination of the digoneutic condition would be brought about.

I may remark, in conclusion, that it appears the larvæ have been found by Mr. Harwood, of Colchester, on the flowers of *Rhamnus frangula*; this shrub would bloom about the same time as the holly, *Ilex aquifolium*: and by Mr. G. F. Matthew, R.N., on the flowers of the *Escallonia* in June ('Larvæ of British Butterflies and Moths,' Ray Soc., 1886, pp. 96 and 100); the latter shrub, with me, blooms later than the holly, so that these larvæ might have first fed on the tender shoots, not on the flowers, which must always be the case with the summer brood of those feeding on the ivy, *Hedera helix*, as the latter plant blooms late in the autumn.

Chirbury, Beckenham; February, 1886.

DESCRIPTION OF *CRAMBUS CANTIELLUS*, MIHI, A
CRAMBUS NEW TO SCIENCE.

By J. TUTT.

IN response to my request (Entom. 29) for specimens of *Crambus contaminellus*, Mr. W. H. B. Fletcher, of Worthing, has been kind enough to send me a very fine bred series of *Crambus contaminellus* from the south coast; and side by side with my series of the *Crambus* captured at Deal, as described in this magazine as above referred to, there can be no shadow of doubt about their distinctness.

With this series for comparison, I find that all the differences pointed out by me (Entom. 28) hold good, but that No. 3 wants modifying, as *C. contaminellus* does vary in its ground colour, though within very narrow limits.

Still the differences are so great that no one, having seen the two species side by side, could possibly confuse them, and the mystery to me is how the new species has escaped detection so long. I am pleased, therefore, to confirm my previous opinion as to the novelty of the species, and beg to append the following description:—

Exp. $8\frac{1}{2}$ "—11". Head and palpi grey, the palpi very distinctly dusted with dark grey. Antennæ simple in both sexes, but in the males thickened towards the base. Thorax and abdomen pale grey, the thorax in some examples much dusted with dark brown scales, and varying in depth of colour according to the colour of the anterior wings. Anterior wings variable in breadth and narrow for a *Crambus*, very acute at the tip, the female having the tip much prolonged. Colour very variable; in males, generally pale grey, but varying to deep mahogany-brown and black; the females are much paler, and consist of two forms, pale straw-colour (which seems rare) and very pale grey (the type).

The anterior wings have two dark transverse lines; the one nearest to the thorax, commencing just below the centre of the costa (not on it), is produced obliquely towards the thorax, till about half-way across the wing, when it is continued at a much more acute angle (still pointing towards the thorax), until it reaches the inner margin very near the thorax.



Anterior wing (about twice the natural size).

At the angular point of this line a very small longitudinal line commences, and is continued for a short distance towards the hind margin. The second line is a doubly angulated line before the hind margin. It commences on the costa, about one-third from the tip of the wing, is sharply elbowed as soon as it commences, the elbow pointing towards the hind margin, and is again sharply elbowed in the opposite direction just above the anal angle. The fringe of the fore wings is dark gray (not glossy); at the base of the fringe are a series of minute black dots running round the whole of the hind margin. Posterior wings grey, with very pale fringes.

As it seems very improbable that the insect has been before described, and is thus without a name, I beg to propose that we name it *Crambus cantiellus*. Kent has produced so many good species, and entomologists have had so many hours of real pleasure in its woods and on its hills, that I think none will find it objectionable to name this *Crambus* after a county in which much of our leisure has been spent.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., January, 1886.

THE LEPIDOPTERA OF NORTH KNAPDALE, ARGYLLSHIRE.

BY JOHN MACKAY, F.P.N.S.

A VERY interesting article appeared in the 'Entomologist' (Entom. xviii. 224), by Mr. Howard Vaughan, on the "Lepidoptera of North Knapdale, Argyllshire," in which the writer gave a brief account of his collecting experiences in that district, in the month of June. Comparatively little seems to be known of the Lepidoptera of this rather remote place, and every item of information on the subject is valuable on that account. It fortunately happened that Mr. Vaughan visited Knapdale in June last year, and as I spent nearly a fortnight collecting in the same neighbourhood in July, our respective lists of captures will help to contribute some slight knowledge of the Lepidoptera peculiar to this district during those months.

Kilmartin, the place where Mr. Vaughan stayed, is situated some miles distant from Tayvallich, the little secluded village where I spent my holidays. Tayvallich, or Tigh-a-Bhealaich, as it is sometimes called, is some thirteen miles distant from Ardrishaig, and can only be reached by means of the carrier's gig, which serves to keep up communication between the two places. The village, which is beautifully situated, consists of only some thirty odd cottages, and is bounded in front by a broad bay, which forms part of Loch Sween, and a short distance behind by Carsaig Bay, beyond which is the Sound of Jura. On either side of the village are high hills covered with birch plantations, while near at hand are plenty of moorland and peat moss, which should produce many plants and Lepidoptera

peculiar to such localities. Above all, it is one of those few delightful spots where the enthusiastic entomologist can pursue his favourite study to his extreme satisfaction, without having a wondering crowd gathered round him, expressing sympathy for the "poor deluded body." It is a country of few inhabitants, which, perhaps, can be accounted for by the number of roofless cottages one notices all around, the scenes of evictions in times past.

On the day of my arrival I found extremely comfortable lodgings in the house of the schoolmaster, and in the evening I took a short walk to see what insects were to be found. I netted some nice specimens of *Acidalia fumata*, *Metrocampa margaritata*, *Cabera pusaria*, *Larentia viridaria* (*pectinitaria*), and a few *Micros*, but as the evening was not very favourable, I deferred operations until the following day. I was advised to try a large moor, a short distance from the schoolhouse, and on visiting the place was delighted to find insects flitting about in great abundance. I never before saw so many butterflies frequenting one spot; they were literally in hundreds. Of course they were almost all common species, such as *Epinephele ianira*, *Lycæna icarus* (*alexis*), *Cænonympha pamphilus*, but I soon found that *C. typhon* (*davus*) was also pretty common on the moor, although it was rather difficult at first to distinguish it from the large specimens of *C. pamphilus*, which were so plentiful. *Argynnis aglaia* would occasionally come flitting along the roadside, and alight on a thistle-top, thus affording a most tempting prize to the eager entomologist, but one not always gained. Once missed, it was off and away across the moor. While searching for *C. typhon* I started up a good many specimens of *A. fumata* from amongst the grass, and these I quickly netted. In a ditch which bordered the moor I took a number of *Hydrocampa nymphæata* and *H. stagnata*; while in a grassy spot near some trees I netted two badly-rubbed specimens of *Argynnis selene*, at which place, doubtless, it was common a short time before. The specimens of *C. typhon* which I captured presented a great variety of colour. Some of the specimens were quite as dark as those taken in the Yorkshire moors, while others were of the usual Scotch form, almost white in colour. There was a complete graduation in colour between the two types. Some of the specimens of *Lycæna icarus* were very pretty; in some of the females the wings

presented an almost burnished appearance, and they were totally unlike any other specimens I have ever seen.

During this and the following evenings I usually collected on the road bordering a birch wood, and was fairly successful. On the grass *Zandlognatha grisealis* was fairly common, and *Hepialus hectus* was flying over the brackens in great abundance. Among the trees *Cidaria immanata* and *Larentia viridaria* were occasionally netted, and one evening I took two badly-rubbed specimens each of *Boarmia repandata* and *B. gemmaria* (*rhomboidaria*). Freshly emerged specimens of *Crambus pinellus* were not uncommon, but what caused me most surprise was the capture of a pretty specimen of *Lithosia lurideola* (*complanula*). I have never heard of this insect being taken so far north, and should like to hear if any of your readers have ever taken it in the Highlands. I also saw a few specimens of *Nudaria mundana*, but it was not common. *Anaitis plagiata*, *Emmelesia albulata*, *Coremia designata* (*propugnata*), *Larentia cæsiata*, were also among my captures.

It will be noticed in this list that I do not mention having captured any specimens of Noctuæ. I tried sugaring several times, but it was a total failure. In fact, I may say that the only Noctua I saw during my whole stay was a specimen of *Plusia pulchrina* (*v-aureum*) which I startled up from the grass and captured. There was a complete dearth of Noctuæ; and yet I took a large number of Noctua larvæ feeding on some plants on the moor.

The above is a pretty complete account of my entomological experiences, but as I was a total stranger to the locality, and did not know the best places to search, it follows that many other species may occur in the district than those I have mentioned.

One afternoon, along with some friends, I paid a visit to a place called Taynish, and on the way we passed a large peat-moss, about which dragonflies of all sizes and colours were darting in great abundance. Although I do not collect Neuroptera, I could not help capturing a number: for anyone who studies this group it would be worth while to visit Knapdale; he would be surprised at the number of dragonflies which frequent every pond and bit of water. Here a botanist will find as many splendid specimens of the royal fern and the hart's-tongue as he would care to carry, while many rare ferns are to be found in great plenty. Splendid

fresh and salt-water fishing is also to be had. One evening I accompanied some friends out to fish in the Sound of Jura, and we had hardly commenced work when a large whale was seen making its way up the sound. It was the first time that I had seen a "real live whale," and need not add that the sight was one which I shall not soon forget.

I intend going to Tayvallich again this season, and hope to have a much larger list of captures to report. Should any of your readers intend visiting this district in July this year, I shall be pleased to hear from them, and shall be glad to give the benefit of such little knowledge which I may possess of the district.

78, Gloucester Street, Kingston, Glasgow, January 23, 1886.

LIFE-HISTORY OF *ASTEROSCOPIUS NUBECULOSUS*, ESP.

BY HERR AMELANG.*

APPEARING in March, *Asteroscopus* (*Petasia*) *nubeculosus* is one of the first moths of the new year. On looking at my diaries, I find that from 1881 to 1885 I took twenty-eight males and twenty-four females. In fair weather the moth sits, about breast high, on old birch trees, squeezing into clefts in the bark, in the warm rays of the March sun; its resemblance to the grey-green cracked bark of the tree probably protecting it from attacks of birds. In March, 1885, I was out one cold stormy afternoon, and could not find a single specimen, though I searched carefully. I had looked several times through the same birch wood, always expecting to find the moth breast high on the stems of the trees, when at last I espied a specimen close to the ground, amongst the cracked bark; I at once searched farther, and captured nine of them in half an hour. The moths had deceived me this time; not liking the cold north-east wind, they had ensconced themselves close to the ground where they were sheltered by the long grass.

In 1883, on the afternoon of March 21st, when there was a strong east wind, a temperature of minus 8° Réaumur (14° Fahrenheit), and the ground was frozen about two inches below the surface, nine specimens, four males and five

* Translated from the Berlin 'Entomologische Nachrichten,' February, 1886.

females, were captured; next morning, after a slight fall of snow in the night, I caught three more males in the same locality. All the twelve (seven males, five females) were put in one cage to breed. The males were much excited, and sought the females eagerly; pairing quickly followed, and only lasted a few hours. I noticed that they flew towards the lamp which was in the room. Eggs were laid the same night. The female extends the ovipositor and feels about with it until a favourable place for laying is found; she deposits the eggs singly, but often lets a little heap of twelve or so fall into the cracks and corners, and thus the business of laying is soon over. She lives for some time after, as long as thirteen days I noted, but does not move about at all. This species is always found singly, two hardly ever appearing on one tree, and the female flies about in the cage while laying her eggs; thus I conclude that she would fly fast in the open air, rushing in and out among the birch branches, and laying her eggs singly, about a yard above ground; for the larvæ always try to climb higher as soon as they emerge. The numbers of eggs deposited by the five females respectively were 300, 271, 217, 200, and 180; hardly 3 per cent. were infertile.

The EGG is hemispherical, and very soft, hardening in about eight or nine days, the colour changing from light green to violet and dark brownish grey, almost to chocolate. As soon as the colour changes from light green to dark brown, which it does by degrees, the surface of the egg becomes sprinkled with little brown dots, like grains of sand, which finally coalesce and disappear in the grey-brown.

The LARVA emerges in about twenty-eight to thirty days; its length is then about 2 mm., colour dull green with brown head; a week later it measures 7 to 8 mm. and turns a darker green. Immediately on emergence it begins to loop, and after devouring the egg-shell (which frequently does not take place), it tries to climb up higher. The larva spins diligently while young, hanging on to the stems and leaves; it eats away the upper side of the latter, so that numbers of young birch leaves have nothing but the veins left. The first change occurs in five or six days, when the caterpillar assumes a darker green, and can scarcely be distinguished from the green of the birch leaves. After the second change it becomes still darker, the claspers turn black, and the

head is whitish. It now lives chiefly on the under side of the leaves, spinning itself there firmly; it eats the leaves from the edge inwards, and rests head downwards while feeding. If disturbed it raises itself, like the larvæ of the Sphinges, and beats about with the upper part of its body; when touched it emits from its mouth a green transparent fluid, of bitter taste, resembling that of the birch leaves. After the first change the caterpillar devours the cast skin, which hangs like a white rag spun to the leaves. Until the second change it is usually remarkably lively and active, but less so as it becomes older, and the full-fed larva is sluggish and lethargic. It then sits with the upper part bent far forward, after the manner of the Sphinges, but always turned in a downward direction. When a large number are together in one cage they disagree, especially as they get older; they bite each other, and the wounded ones die in a few days. The birch (*Betula alba*) is their favourite food, but they will also eat buckthorn, hornbeam, elm, and guelder-rose. Before pupating the larva becomes restless, wandering all over the cage; it eats little or nothing, and loses the beautiful green colour, becoming a dirty grey or brown; finally it buries itself about a foot deep in the earth. It lies there curled up, for twelve days, before turning to a chrysalis.

PUPATION takes place in the first half of June, and often lasts into the second year. I have opened pupæ in June of the year following pupation, and found the moth perfectly developed and alive, though it would have stayed nine months longer in pupa. I have observed similar cases with *Panolis (Trachea) piniperda*. The regular appearance of the perfect insect in March is very remarkable. According to observations in my diaries I have only twice found it in April: on April 4th, 1881, I took a male of a rich brown colour; and on April 11th, of the same year, a crippled male on a hornbeam, by the flooded bank of the Mulde. The chrysalis had long been below high-water mark, but was not injured; water had interfered with emergence, however, and thus caused deformity. The pupa is very strongly made, and provided with two anal hooks, by the help of which the moth inside the case works its way up out of the earth. The appearance in March, 1883, was most remarkable: in spite of the extreme cold (14° Fahrenheit), in spite of snow and hard frost, the pupa worked itself out of the warm ground, the moth burst its case, and,

developing perfectly (for no cripples were found), flew out joyfully into the wintry world. I have this year observed a second copulation in the case of one male, which, after pairing once, paired again the same night with a freshly-caught female. Out of the 190 eggs produced by this female 57 were infertile.

The moth frequents sparse birch woods; when there is much undergrowth it chooses the outside trees, for it likes room to fly; in 1881 I found a male on a poplar tree, at least 2000 yards away from the nearest birch wood, thus proving his powers of flight. It seems to prefer birch woods which stand on damp sandy ground, for it seldom frequents birches growing in meadow ground, unless liable to flood.

It seems improbable that this moth lives on sweets; its proboscis is only 3 mm. in length, and in March there are but few flowers in bloom. I offered some honey to the male which had fertilised two females, but I did not observe that he took any. Judging from the number of specimens found at present, *A. nubeculosus* is not rare in the Dessau district, although perhaps not exactly common. It threatens to disappear from certain parts, with the birch tree, which is becoming extinct, owing to extensive cutting down and none being planted in their place. The quantity of eggs laid leads me to suppose that the larva has many enemies; the weather must be a greater and even more formidable foe than the army of parasitic flies and ichneumons.

Dessau, Germany.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS RAPE WITH ANGULAR WINGS.—Enclosed is a specimen of *Pieris rapæ* which I have bred from some larvæ collected in September, 1884. My object for sending it to you is to ask you if it is a usual occurrence to meet with specimens with the wings of the same shape as the one sent? I have never met with one before this.—THOMAS HILL; 15, Russell Street, Willenhall, December 20, 1885. [The specimen is curiously abnormal, the indentations being probably the result of accident to the pupa which produced the example.—J. T. C.].

RESTING HABIT OF VANESSA ATALANTA.—Can any of your readers explain to me why *Vanessa atalanta* is so fond of settling

about wasps' nests when built in trees? I have frequently observed this habit, and have never been able to ascertain the cause. — E. INGLEBY MILLER; North Dulwich, Surrey, Jan., 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS. — On reading Mr. Harcourt Bath's notes upon *Lycæna argiolus* (Entom. 29), I thought it might be useful to pen a few remarks of its occurrence in the neighbourhood of the Malverns. Up to about the year 1877 I looked upon it as one of our common butterflies; it could be seen flying with *Thecla rubi*, both of which, the last few years, have become very scarce in all our woods and copses. The best locality in this neighbourhood is the Holly Bush Hill, about five miles on the Malvern range, where the holly trees grow most luxuriantly. I have taken *L. argiolus* as early as the 17th of April, in good condition till the 7th of May, and again in August, but have never then seen it plentiful. I have observed it flitting over the bramble blossoms, and have beaten the larvæ of it from holly and ivy in October, which larvæ have turned to pupæ about the beginning of November, and have emerged in the following April. There are two broods in our district; the April specimens are larger and brighter than those taken in August. — W. EDWARDS; Great Malvern, January, 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS. — In answer to the editorial query (Entom. 33), I may say that mountain ash flowers early in the summer with us. On reference to my diary I find that the earliest date on which I have known it to flower in Sutton Park (the result of several years' observations) is May 5th, and its fruits commence to ripen in July, so that it is quite unlikely that it should be able to support a second brood of the butterfly. On the other hand, bramble comes into flower much later, June 21st being the earliest date recorded in my diary. It remains in full blossom throughout July, August, and the major part of September, and occasional flowers may be noticed even as late as November (26th) provided the weather be mild. The blackberry blossom could thus very well supply the requisite food for a second brood of *L. argiolus*, should there happen to be one. In the same article, p. 31, line 7, "Harwich" should read "Warwick," and p. 31, line 20, "Wood" should read "brood." — W. HARCOURT BATH; Sutton Coldfield, near Birmingham, February 15, 1886.

LYCÆNA ARGIOLUS.—I am at a loss to understand how the idea originated that the larva of the second brood of this species feeds on the *blossoms* of the ivy; it is quite possible that the *full-fed* larva may have been found feeding on the blossom or beaten from the ivy when in bloom, but on what did the young larvæ feed, as every one knows that the second brood of *L. argiolus* is over long before the time that the ivy blossoms? My belief is that it feeds on the *leaves* of either of these trees in the localities where it occurs. In one part of Epping Forest I have seen this species out in abundance before the holly has blossomed, although I am well aware that it frequents the blossom, no doubt the same as other butterflies frequent other flowers, for the purpose of feeding on the honey they contain. That it feeds on the young leaves of the holly I have had ocular demonstration, as some few years since I obtained some ova of this species, which I gave to my friend Mr. Wellman, who fed them up and got them into pupæ, but they did not for some cause or other emerge into the perfect state. We gave some of the larvæ to the late Edward Newman, and he published a full description of the same and the manner of feeding. Not having the volume of the 'Entomologist' by me, I cannot give the date, but it was subsequent to 'British Butterflies' being published. Do away with the "blossom theory," and you have no difficulty in accounting for the two broods of *L. argiolus*, although I am inclined to think that the so-called second brood is only a partial one, *i. e.*, the descendants of the very early emerged specimens. I have on several occasions seen numerous specimens of the second brood in the part of Epping Forest referred to, and in other places, but never in anything like the numbers of the spring specimens. The earliest date I have seen it on the wing was one year on the 12th April, when I took four specimens, and ten days afterwards the species was out in abundance, and in the finest condition. In conclusion, I will merely add that I do not think any entomologist has ever seen *L. argiolus* on the wing when the ivy was in bloom in October or November.—C. J. BIGGS; 3, Stanley Terrace, West Ham Park, E., February 2, 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS.—I am afraid Mr. W. Harcourt Bath's knowledge of the entomology of the Midlands cannot be very extensive, at all events so far as *L. argiolus* is

concerned (Entom. 29). I can answer for its occurrence in three distinct localities, two in the immediate neighbourhood of Burton-on-Trent, and one farther off, but still in this county of Stafford. It occurs among hollies at the edge of Mace Woods, near Whitmore Station, between Stafford and Crewe, where the Rev. T. W. Daltry has repeatedly taken it. And in our own local list, published in last year's 'Entomologist' (Entom. xviii. 180), it is recorded as "scarce round Repton (W. G.), abundant in Needwood Forest." I have myself taken it in plenty, in a wood called "Parson's Brake," about seven miles from Burton, during May, and have noticed that it frequently settles on the blossoms of the wild hyacinth, when, of course, it is easily taken. I can corroborate Mr. Bath's statement as to the great majority of the specimens taken being males, though my experience hardly bears out his as to the time that elapses between the appearance of the two sexes. There is not much ivy in the neighbourhood, but I can say nothing as to the occurrence of a second brood of the butterfly, having never visited the locality at that time of the year. But I have not much fear of Needwood Forest being further "cut up and intersected," unless indeed our legislators should succeed in making it "a misdemeanour" to hold more than 100 acres of land uncultivated, in which event English entomology would soon become a thing of the past. My own impression is that *L. argiolus* may be looked for with success in woods throughout the Midlands, wherever the hollies are permitted to attain their full growth; and this I know to be the case, not in one wood only, but in several, throughout the district known as Needwood Forest. I hope, however, that during the coming season the members of our "Entomological Section" may be able to furnish you with fuller particulars. — CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, February 2, 1886.

REMARKABLY SMALL *LYCÆNA ICARUS*.—I caught a remarkably small male specimen of *Lycæna icarus* (*alexis*) on Keston Common on the afternoon of August 29th, 1885. The exact expanse of the anterior wings is eight-tenths of an inch; as compared with a normal size of one and a quarter inch for this species. It is smaller than any *Lycæna minima* (*alsus*) which I possess.—ERNEST E. JOY; 15, Brownswood Park, N. February 15, 1886.

APPEARANCE OF *ACHERONTIA ATROPOS*.—Can any lepidopterist who has been in the practice of breeding *Acherontia atropos* inform me if the late pupæ which have not emerged in the autumn are likely to do so the following spring or summer, and which I believe to be the case in a state of nature; and also at what time of year are the eggs deposited? From observations taken of a caterpillar obtained in the month of August of last season it appears, on burying some inches below the surface, to form a large hollow cavity by opening or cementing the earth over and around it; in this it changes to the pupa state. By this means it evidently obtains a more equable temperature and amount of moisture. May not the cause of so many pupæ found not coming to maturity be from the fact of having been disturbed from their natural position? The pupa appears excessively sensitive, the one I had persistently objecting to being fully covered with earth on my having to move it for transit, and it died in November last. Both the larvæ and pupæ were somewhat abundant in parts of Somersetshire, Gloucestershire, and Dorsetshire last season.—T. B. JEFFERYS; Clevedon, Feb. 6th.

SPHINX CONVULVULI IN NORTH WALES.—Although *Sphinx convulvuli* appears to have been observed in so many places during last season I do not see any record of its occurrence in Wales. On the 12th of September I received three specimens from Llanfairfechan, Carnarvonshire, one of them still alive. Though I have known the place for some years, I never knew it to occur there before.—J. A. JENKINSON; 63, Bury New Road, Manchester, February 10, 1886.

SPHINX PINASTRI IN SCOTLAND.—The occurrence of *S. pinastri* in the Eastern Counties, reported by Mr. Cooper (Entom. 14), reminds me that while collecting during September, 1860, near Achnaeroish, in the Isle of Mull, West Scotland, my attention was drawn to a full-fed larva of a *Sphinx*, which was, I find from a note taken at the time, green, with one brown stripe and two of pale yellow, spiracles orange and black. This larva was crawling down the trunk of a Scotch fir tree, and, after turning to a healthy pupa, the perfect *Sphinx pinastri* emerged on the 24th of the following July. The specimen still remains in my cabinet. In September, 1861, I found in the same wood a second larva, about half grown, but did not succeed in rearing it, as it died

within a week. I feel sure it would repay any entomologist to work the Island of Mull, for, during the time I was there, I captured many interesting species.—W. EDWARDS; Great Malvern, January, 1886.

PHLOGOPHORA METICULOSA AT CHRISTMAS.—It may be of interest to your readers to hear that I found a very perfect specimen of *Phlogophora meticulosa* on the north side of an oak tree at Putney, on December 26th last year. Could it have been hibernating, as I believe that *P. meticulosa* is rarely found after October? It was apparently hiding in a crevice, and seemed very sleepy.—C. B. H. HUNT; Draycott Lodge, Fulham, February 4, 1886.

ASTHENA BLOMERI.—This species occurs in our woods sparingly, some seasons more plentifully than others. I find, on referring to my note-book, that in the year 1876, on the 27th May, I beat from hazel fourteen specimens, quite fresh, and took the species up till the 10th of June. Of late years it seems to have become more scarce, for I have seldom taken more than five or six in a year.—W. EDWARDS; Malvern, January, 1886.

GEOMETRA PAPILIONARIA AT HIGHGATE.—I took a specimen of this splendid insect inside a gas-lamp here on the 3rd August, 1885. It was in very fair condition, and measured exactly two inches across the spread wings. I should be glad to hear if this insect has been previously observed in this neighbourhood.—A. E. TONGE; Rutland Villa, Highgate, London, N., Feb. 4, 1886

FAUNA OF MIDDLESEX.—I have this year been engaged in compiling a list of the fauna and flora of Bedford Park, Chiswick. The results, though as yet small compared to the probable total, are sufficient to prove that there is still enough insect and other life within the metropolitan district to make collecting both profitable and interesting. The results are briefly these:—Of Lepidoptera I have records of 11 Rhopalocera, including *Euchloë cardamines*, *Gonopteryx rhamni*, *Colias edusa*, *Vanessa cardui*, *V. atalanta*, and *Polyommatus phleas*. The Sphinges are *Sphinx ligustri*, *Smerinthus populi*, *S. tilie*, and *S. ocellatus*. The Bombyces are *Euchelia jacobææ* (it is remarkable that the more usual food-plant, *Senecio jacobææ*, is not included in the flora, but *S. vulgaris* occurs), *Heptialus humuli* (very abundant), *Zeuzera pyrina* (*æsculi*), *Leucoma salicis*, *Dicranura vinula*, *Thyatira derasa*,

and 7 others. The Noctuæ at present only number 20, including *Acronycta aceris* (larvæ), *A. megacephala*, *A. psi*, *Mamestra persicariæ*, *Noctua plecta*, *Triphæna comes* (orbona), *Plusia chrysitis*, and *Catocala nupta*. There are 16 Geometræ, including *Uropteryx sambucaria*, *Hemerophila abruptaria*, *Amphydasis betularia*, *Crocallis clingularia*, *Hemithea strigata* (thymiaria), *Hypsipetes sordidata* (elutata) (variety), *Cidaria testata*, and *Eubolia cervinaria*. The smaller moths have not been worked, and at present only *Ebulea sambucalis*, *Aciptilia pentadactyla*, and *Hyponomeuta padellus* are on record. The capture, and consequent recording, of many of the above, is due to the industry of Miss E. Sharpe, F. G. Femm, J. Gray, and C. Rowland. In nearly every case I have examined the specimens. The Coleoptera number 35, and include *Clivina fossor*, *Cercyon flavipes*, *Dromius melanocephalus*, *Pterostichus strenuus*, *Quedius fulgidus*, *Acidota cruentata* (one only), *Lathrobium fulvipenne*, *Hister unicolor*, *Agriotes obscurus*, *Coccinella variabilis* (var. black, with large yellowish red spots, and var. yellowish, unicolorous, and also the form called *dispar*), *Telephorus lividus*, *Crepidodera aurata*, and *Chrysomela polita*. There are 12 Hemiptera, including *Calocoris bipunctatus* (which is common), *Acanthosoma hæmorrhoidale* (one specimen), *Velia currens*, *Notonecta glauca*, and *Pemphigus bursarius*. The Hymenoptera have for the most part been already recorded (Entom. xviii. 247); but *Lasius flavus*, *L. niger*, *Myrmica ruginodis*, and *Cynips kollari* may be added. The other orders have, owing to the difficulty of naming the specimens, been almost entirely neglected; and I have notes only of some common and well-known forms, e. g., *Chrysopa perla*, *Acheta domestica*, *Lucilia cæsar*, and *Sciara tilicola*.—T. D. A. COCKERELL; Bedford Park, W., December, 1885.

LEPIDOPTERA AT LIGHT, &C., AT WOODFORD, IN 1885.—The following species, taken by my brother and myself at 3 Primrose Terrace, Woodford (from which we have recently removed), may be interesting as showing the number of species obtained in a single season in such a limited area, not more than 8 yards by 50, within 7 miles of the centre of London. Of those marked with an asterisk, single specimens only were taken. *At light*.—*Smerinthus ocellatus*, *S. populi*, *Nola cucullatella*, *Calligenia miniata*,* *Lithosia lurideola* (complanula), *Arctia caia*, *Spilosoma lubricipeda*, *S. menthastri*, *Porthesia similis* (auriflua), *Leucoma*

salicis, *Odonestis potatoria*, *Drepana falcataria*, *Cilix glaucata* (spinula), *Dicranura vinula*, *Pterostoma palpina*, *Lophopteryx camelina*, *Notodonta dictæa*, *Phalera bucephala*, *Acronycta psi*, *Leucania lithargyria*, *L. comma*, *L. impura*, *L. pallens*, *Tapinostola fulva*, *Gortyna ochracea* (flavago), *Hydræcia nictitans*, *H. micæa*, *Axylia putris*, *Xylophasia lithoxylea*, *X. monoglypha* (polyodon), *Dipterygia scabriuscula* (pinastri), *Neuronia popularis*, *Charæas graminis*,* *Luperina testacea*, *Mamestra sordida*, *M. brassicæ*, *M. persicariæ*, *Apamea basilinea*, *A. gemina*, *A. ophiogramma*, *A. didyma*, *Miana strigilis*, *M. fasciuncula*, *M. arcuosa*, *Grammesia trigrammica* (trilinea), *Caradrina morpheus*, *C. alsines*, *C. quadripunctata* (cubicularis), *Rusina tenebrosa*,* *Agrotis segetum*, *A. exclamationis*, *Noctua augur*, *N. plecta*, *N. c-nigrum*, *N. triangulum*,* *N. festiva*, *N. rubi*, *N. xanthographa*, *Triphæna ianthina*,* *T. comes* (orbona), *T. pronuba*, *Amphipyra tragopogonis*, *Mania typica*, *Pachnobia rubricosa*, *Tæniocampa gothica*, *T. incerta* (instabilis), *T. stabilis*, *Orthosia upsilon*, *Anchocelis lunosa*, *Tethea subtusa*,* *Calymnia trapezina*, *Dianthæcia capsicola*, *D. cucubali*,* *Phlogophora meticulosa*, *Hadena trifolii* (chenopodii), *H. oleracea*, *H. pisi*, *H. thalassina*, *Habrostola triplasia*, *Plusia chrysis*, *P. iota*,* *P. gamma*, *Zanclognatha grisealis*, *Z. tarsipennalis*, *Hypena rostralis*, *Uropteryx sambucaria*, *Rumia luteolata* (cratægata), *Metrocampa margaritaria*, *Pericallia syringaria*,* *Selenia bilunaria* (illunaria), *Odontopera bidentata*, *Crocallis elinguaris*, *Eugonia alniaria* (tiliaria), *E. fuscantaria*,* *Hemerophila abruptaria*, *Boarmia gemmaria* (rhomboidaria), *Pseudoterpna pruinata* (cytisaria), *Geometra papilionaria*,* *Phorodesma pustulata* (bajularia), *Iodis lactearia*, *Hemithea strigata* (thymiaria), *Zonosoma punctaria*,* *Acidalia dilutaria* (interjectaria), *A. virgularia*, *A. imitaria*, *A. aver-sata*, *Timandra amatoria*, *Cabera pusaria*, *C. exanthemata*, *Halia vauaria* (wavaria), *Strenia clathrata*,* *Abraxas grossulariata*, *Ligdia adustata*,* *Lomaspilis marginata*, *Emmelesia decolorata*,* *Eupithecia oblongata* (centaureata), *E. isogrammaria*, *E. pimpi-nellata*, *E. nanata*, *E. subnotata*, *E. vulgata*, *E. assimilata*, *E. sobrinata*, *E. rectangulata*, *Hypsipetes sordidata* (elutata), *Melanthia ocellata*, *Melanippe rivata*, *M. sociata* (subtristata), *M. fluctuata*, *Coremia designata* (propugnata), *C. ferrugata*, *C. unidentaria*, *Camptogramma bilineata*, *C. fluviata*,* *Phibalapteryx vitalbata*,* *Triphosa dubitata*, *Cidaria truncata* (russata), *C.*

testata, *C. associata* (dotata), *Pelurga comitata*, *Eubolia plumbaria*, *Senta maritima** (ulvæ), and *Chesias rufata** (obliquaria); in all 142 species, 80 of which were taken by an adaptation of the American moth-trap, described by Knaggs. *In daytime*.—Fifteen Diurni, including *Euchloë cardamines*, *Gonopteryx rhamni*, *Vanessa io*, *V. atalanta*, *V. cardui*, and *Pararge megæra*, and *Orgyia antiqua* on the wing. Also several species, including *Biston hirtaria* and *Acidalia dimidiata* (scutulata) at rest on fences. *Nothing at dusk*.—In addition to many of those taken at light, and which need not be repeated: *Sphinx convolvuli*, *Hepialus humuli*, *H. lupulinus*, *Agrotis nigricans*, *Hypena proboscidalis*, *Eugonia quercinaria* (angularia), and *Larentia didymata*. *At sugar*.—Twenty-seven species, all previously mentioned, except *Acronycta megacephala* and *Mania maura*. Among numerous other larvæ was found one of *Sphinx ligustri*, making a total in all of 170 species of Lepidoptera.—E. B. BISHOP; Charlton Villa, Princes Road, Buckhurst Hill, Essex, November 16, 1885.

PERFORATED OVA OF LEPIDOPTERA.—I have been unable to find the article mentioned by Prof. Jeffery Bell (Entom. 18) on the Micropyle, and shall be much obliged if he will let me know more particulars as to where it may be found.—C. B. HOLMAN HUNT; Draycott Lodge, Fulham, February 4, 1886.

FORCING PUPÆ.—The following may be of interest to some of your readers. Being determined to find out if there really was any good in forcing, and having a tortoise stove in my greenhouse, I adopted the following plan:—On the top of the stove I placed four bricks, two on each side above each other; on these a square pot seed-pan, the finish being a good-sized fish-bait tin. An aperture was left between the bricks, so as to let the hot air circulate freely all round. In the tin was placed moss, which was kept moistened with warm water, sprinkled over the pupæ with the hand every other day. On November 17th the following pupæ were placed in the tin, and the temperature kept at about 90 to 100 degrees:—Six *Acherontia atropos*, six *Chærocampa elpenor*, eight *C. porcellus*, twelve *Deilephila euphorbiæ*, four *Smerinthus ocellatus*, and three *Sphinx ligustri*. The result is that now (20th of January) the following imagines are out:—Six *C. elpenor*, nine *D. euphorbiæ*, two *C. porcellus*, and one *A. atropos*. The rest of the *A. atropos* died just as they were about

to change, no doubt through some mismanagement. The other pupæ are healthy and will soon change. On December 21st a few more were introduced, among others *Macroglossa fuciformis*, *Cucullia scrophulariæ* and *C. verbasci*; during this short time three *M. fuciformis* and three *C. verbasci* have developed. I have also kept a lot of other pupæ in the same greenhouse, where the temperature ranges from 55° in the day to 45° at night; these have been in the greenhouse about the same time as the others. Two *Saturnia pavonia* (*carpini*), and one *Pygæra curtula* are out of this lot.—H. H. MERRIMAN; Blundellsands, near Liverpool, January, 1886. [We presume that the *Deilephila euphorbiæ* mentioned are exotic pupæ, as this species does not appear to have been taken in Britain for some years.—ED.]

PSEUDOPSIS SULCATUS, Newm.—On the 17th of last October I took an example of this curious insect in an old haystack, but, though I searched carefully, could find no others. *Micropeplus margaritæ*, Duv., and *Cryptophagus umbratus*, Eric, also occurred sparingly, and *Heterothops dissimilis*, Gr., rather commonly.—E. CAPRON; Shiere, Surrey, January, 1886.

EUPLECTUS KUNZEI, Aubé.—On reading Mr. Blatch's paper in the Ent. Mo. Mag. for this month, I at once referred to my Euplecti, and find that six of my examples of *Euplectus signatus* are undoubtedly the rare *kunzei* of which he only knew three British specimens. I had thought them large females of *E. signatus*. They were taken at various times in a sandpit, but all in the same locality.—E. CAPRON; Shiere, February, 1886.

MOTH TRAPS.—In answer to Mr. Hall (Entom. 45), I must admit that the moth-trap he mentions appears to be of little use. Last summer I tried it on several different nights, and at various parts of our garden, but was unable to catch even a gnat in it. I am not quite certain whether the figure in the 'Field Naturalists' Hand-book' is intended to be a ground plan or a vertical section. Though I used the trap in both positions, I was unable to get any result at all. I made the trap myself, and perhaps it was too roughly constructed to take the fancy of the moths.—C. B. H. HUNT; Draycott Lodge, Fulham, Feb. 4, 1886. [See remarks by Mr. E. B. Bishop (Entom. 66).—ED.]

ERRATUM.—Page 38, for "Dychwood Forest" read "Wychwood Forest."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 3rd.* Robert M'Lachlan, F.R.S., President, in the chair.

The President nominated Mr. F. Du Cane Godman, F.R.S., Mr. H. T. Stainton, F.R.S., and Mr. J. Jenner Weir, F.L.S., Vice-Presidents for the ensuing year.

Dr. Livett, Lieutenant Goodrich, and Messrs. Eustace Banks and F. Enock were elected Fellows; and M. Ragonot, of Paris, ex-President of the Entomological Society of France, was elected a Foreign Member of the Society.

Mr. C. O. Waterhouse exhibited some scales of *Coccidæ* (*Eriopeltis*), some of which were found by Mr. F. Moore on blades of grass at Ilfracombe; and others were found by Mr. Waterhouse on blades of grass in the Warren at Folkestone. Mr. E. A. Fitch remarked that *Eriopeltis festucae* had been recorded as British at a meeting of the Society held about thirty years ago.

Mr. Douglas sent for exhibition leaves of *Euonymus japonicus*, received from M. Lichtenstein, infested by *Chionaspis euonymi*, which occurred in great numbers at Montpellier and Nismes, and always destroyed the shrubs attacked by it.

The President exhibited specimens of *Tettix australis* (Walker), received from Mr. Olliff, of the Sydney Museum, who had captured them at the River Nepean, New South Wales. Mr. Olliff stated that the insect was decidedly subaquatic; he had found the insects not only on the surface of pools of water, but also eight or ten inches below the surface on the stems of water plants.

Mr. W. F. Kirby exhibited, on behalf of Mr. Ralfe, several specimens of *Lycæna corydon* of a very extraordinary character; and Mr. Weir and others made remarks on them.

The Rev. W. W. Fowler exhibited a specimen of the almost unique beetle, *Harpalus calceatus*, taken by himself at Bridlington, Yorkshire; also a specimen of *Apion Lemoroi* (Brisout), a new French *Apion* taken on the coasts of Normandy and Brittany. He also exhibited several species of British *Helophori*, and read notes on their synonymy.

Mr. H. Goss read an analysis of M. Brongniart's recent work on 'Les Insectes Fossiles des Terrains Primaires' (Rouen, 1885),

and expounded that author's views on the classification of insects from geological data.

The Rev. W. W. Fowler read notes on "A small collection of *Languriidæ*, with descriptions of two new species."

Dr. Baly communicated a paper entitled, "Descriptions of new genera and species of *Galerucidæ*."

Mr. J. Edwards communicated the first part of a synopsis of British Homoptera (*Cicadina*).—H. Goss, Hon. Secretary.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 4th*, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Billups exhibited *Agapanthia lineaticollis*, Don., from Lincoln; also *Callidium variabile*, Linn., and *Strangalia 4-fasciata*, Linn., from Chobham. Mr. Rose, a variety of *Epinephele hyperanthus*, L., in which the ring-spots of the upper side, instead of being of the ordinary form, were identical with those usually confined to the under sides. Mr. Wellman, a fine series of *Oporabia filigrammaria*, H.-S. Mr. J. T. Williams, a very beautiful banded variety of *Nyssia hispidaria*, Fb. Mr. Joy, subdiaphanous varieties of *Vanessa io*, L., and *V. urticæ*, L. Mr. South, a series of *Emmelesia albulata*, Schiff., from Switzerland, and the following counties and districts of Great Britain: Kent, N. Devon, Dumbarton, Rannoch, and the Shetland Isles; and contributed some interesting notes on the different forms of this species. It was resolved that the Council be requested to organise a scheme for the collection of material upon which to found a complete list of the fauna and flora of certain of the southern counties.—H. W. BARKER.

REVIEW.

Larvæ of British Butterflies and Moths. By the late WILLIAM BUCKLER. Vol. I., Butterflies. Ray Society, 1885.

THIS volume is issued by the Ray Society to the subscribers for the forty-second year, 1885.

During the long period of the Ray Society's existence the works issued by them, though doubtless of unequal merit, have been in all cases important contributions to science, and in most instances would have been unpublished had the society not existed.

The volume under consideration is the first that the Society

has issued on that most fascinating order of insects the Lepidoptera, and is the "first instalment of the entomological remains of the late William Buckler." The late Mr. Buckler was well known to all students of the British Lepidoptera as a most painstaking and correct delineator of the larvæ of that order of insects, and it was with great satisfaction they hailed the announcement that the Ray Society had purchased his drawings, and that the labour of "half a lifetime" would not be lost.

The letterpress extends to about two hundred pages, and is the joint production of the late Mr. Buckler and the Rev. John Hellins, the latter of whom, from the year 1858 to June, 1884, had been in constant correspondence with the former. The whole has been most ably edited by Mr. H. T. Stainton, F.R.S.

The descriptions of the larvæ, and the accounts of the difficulties met with in rearing them, have that charm of truthfulness which render them so welcome to the student of Nature.

The plates, seventeen in number, contain each from sixteen to eighteen figures. Mr. Buckler appears to have excelled much more in drawing the larvæ than the pupæ; the latter are in most instances little more than outlines; the drawing of the pupa of *Apatura iris*, Plate VII., is very inferior to that of the larvæ of the same plate.

Amongst some of the best may be pointed out *Aporia crategi*, Plate II.; *Vanessa antiopa*, Plate VIII.; and *Grapta c-album*, Plate IX. In these cases the figures are excellent. The representations of four larvæ of *Pyrameis cardui*, Plate VIII., no doubt faithfully rendered, show how large is the range of variation in the larvæ of that species.

The plates are by no means of equal merit, and there are evidences that the earlier drawings of Mr. Buckler were much surpassed by his later productions.

The execution of the plates by Messrs. West, Newman & Co. leaves nothing to be desired.

It may be well to point out that the Ray Society has incurred heavy expenses in the purchase of the drawings, and in the getting up of the work, and that the issue of the subsequent volumes necessary to complete it in a comparatively short time, and the size of each volume, will depend upon the support received, by an increase in the number of subscribers.

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[No. 275.]

CRAMBUS CONTAMINELLUS IN THE ZELLER COLLECTION.

By J. W. TUTT.

IN my notice on a probable new species of *Crambus* (Entom. 29) I expressed the opinion that the two species which obtain in Sussex and Lancashire, and known as *C. contaminellus*, and the Deal species (which probably is the same as the Black-heath species) for which I proposed the name *cantiellus*, were possibly mixed in the Continental collections; I therefore went through Zeller's collection of the Crambidae at the Natural History branch of the British Museum at South Kensington, and examined carefully his series of *Crambus contaminellus*. I found, indeed, a good mixture, and made the following notes on the insects comprised in the series, which, I think, will be interesting.

1. Six specimens of the Lancashire and Sussex *Crambus contaminellus*, labelled *contaminellus*, H., and on the label reference is made to H. fig. 59 and Tr. ix. 1, 124. On referring to Hübner, fig. 59, I found a *Crambus* figured with a dot on the central nervure of the wing, and a broken line near the hind margin. This most certainly would not do for the Deal insect, as in all fine specimens the first line (crossing the centre of the wing) is distinguishable throughout, and the second line, although finely marked, is not broken, and this I consider a very marked characteristic of the Deal insect, for, while the markings of *C. contaminellus* may be looked upon as two broken lines made up of a series of dashes, they are never broken up in the Deal

Crambus cantiellus; neither would the figure do for the ordinary Lancashire and Sussex form, but I find there is a form of this species which has the central shade reduced to a minimum, and the lines almost obsolete, and Zeller undoubtedly considered that Hübner had figured this form, for his insects of this type include two specimens of it, the central shade being nearly lost in the ground colour, the first line reduced to a dash, and the second line much broken; hence, I presume, his reference to Hübner's figure. Except for this form, Hübner's figure would not agree with either of the species, and I had an impression at first that it was meant for the pale var. of *Crambus inquinatellus*, which is the only *Crambus* I know where there is a central dot followed by a broken line.

It may be well to remark here that Hübner's figures are at the best very unreliable, and, in obscure species, would often do as well for several species other than those they are supposed to represent.

2. In Zeller's series there are also three specimens of the Deal species (one male and two females), labelled Astrabad, Led. These are the grey form which more nearly approach the true *Crambus contaminellus* than any other.

3. Three specimens (one male and two females) labelled *contaminellus*, Sarepta, Christoph. These are of a pale whitish grey colour, without markings, even more robust than our *C. contaminellus*, and I believe quite distinguished from either of our species.

4. Twelve specimens labelled with localities and dates. These are the Deal species, eleven being males and one female; the males are variable in colour, and include two dark vars.

There is no doubt that it is Hübner's imperfect figure that has been the means of causing so much uncertainty about *Crambus contaminellus*, and unless it be referred to the obscure form of our Lancashire and Sussex insect as before noticed, is so poor that it would represent neither, or, in other words, would represent equally well (or badly) either of our species. Had it not been that I found a form of our *Crambus contaminellus* somewhat approaching his figure, I should have considered his figure to have represented the variety of *C. inquinatellus* before mentioned.

Those who have had Herrich-Schäffer's work have been more

happily circumstanced. He gives a good figure of *Crambus contaminellus*, as we know it, and it agrees exactly with the series in the Doubleday collection of our Sussex and Lancashire form.

There is no doubt that the typical *Crambus contaminellus* of H.-S. was the Lancashire and Sussex form, and, as far as can be fairly made out from Hübner, that his was the same species. To make the matter more complex, both are comparatively coast species, *C. contaminellus* apparently always so, but *C. cantiellus*, besides being a coast species, inhabits sometimes inland districts, as the Blackheath district, and also districts of Central Europe, probably, however, old coast lines in almost every case, so that the locality of the insect can do little towards the identity of its species.

I might add, that in the figure of the insect (Entom. 53), although the second doubly-angulated line is correct as to direction, it is more zigzag in shape; and when I referred to *C. geniculeus* (Entom. 56) I may have been misleading, as it was again only to general shape and direction that I intended to refer, as the line itself is continuously zigzag throughout, and much finer than in that species.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., March 8, 1886.

NOTES ON THE CRAMBUS FROM DEAL.

By W. H. TUGWELL.

THE two notices on this subject in the last two numbers of the 'Entomologist,' by my friend Mr. J. W. Tutt, have interested me greatly, as examples had been in my cabinet since 1877 as doubtful *Crambus contaminellus*. A short account of them may possibly interest others.

On my first visit to Deal, August, 1877, I took five females of this *Crambus*, and I could not satisfactorily determine them, so sent them on to Mr. C. G. Barrett, one of our best authorities on British Micro-Lepidoptera, and about them he wrote me, Oct. 31st, 1877:—"I believe that your *Crambus* is the female *contaminellus*, though I never saw one before. Mine seem to be all males. The Blackheath *contaminellus*, which I expect you have, is rather redder and less distinctly marked than coast specimens. If

your other specimens are males, and have the apex produced like this, they will be distinct from *contaminellus*; but, if they are rounded, you will find the name I give them correct. Please examine and let me know the result, for this creature is of a very curious form." At that time I had only females, nothing more could then be done; and, although I afterwards, in 1878, 1879, and 1880, secured odd specimens of both sexes, I failed to reopen the subject. The six specimens in my cabinet, ranged after the Lancashire (Preston) *Crambus contaminellus*, always impressed me as differing greatly from that insect; and when Mr. Tutt zealously worked up a fine series at Deal, one could hardly fail to see that they must be distinct. For all that I fear my friend has been a little premature in elevating the Deal insect in his new species, *cantiellus*, much as I should like to see my county, Kent, honoured by the name on our list.

At the February meeting of the South London Entomological Society I exhibited the Deal and Preston insects; when, directly Mr. W. West, of Greenwich, saw the Preston *C. contaminellus*, he at once said that they were totally different to his Blackheath *Crambus contaminellus*, and promised to send them to me for comparison, which he did, *viz.*, two males and two females, taken by himself on Blackheath some ten years since. I fear the insect is lost there now, for it appears no longer to occur. It was at once clear that the Blackheath insect was identical with the Deal species. This was a great surprise to me. I therefore visited Mr. Stainton, who is ever ready and desirous of helping entomologists; so that I did not hesitate to seek his aid. That appeared to me the best means of finding out the source of his information for writing the 'Manual' description, and to gather from his rich collection and library what was really known of the species on the Continent. I found, as expected, that Mr. Stainton had written his description of *Crambus contaminellus* from Blackheath specimens, of which he had two males, in his collection. Apparently, like Mr. C. G. Barrett, he had not any female examples: hence the reason why the peculiar form of that sex was not described in the 'Manual' or known to Mr. Barrett.

On seeking for the continental knowledge of the species, Hübner's plates, published 1801, were first inspected; here we found that he had the Deal form, characteristically shown,

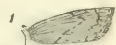
viz., in the unicolorous wing, i. e., no dark streak or shading, as in the Preston insect, and the first line showing only as a dot or spot on the central nervure of anterior wing, which is a frequent character in the Deal insect. There could be no doubt that our Blackheath and Deal insect was Hübner's *C. contaminellus*. We then turned to Herrich-Schäffer's magnificent work, published about 1854 or 1855. There the Preston *C. contaminellus* was clearly and well shown, its dark streak of blackish-brown shading running from the base, and filling up the space between the median and submedian nervures to what represents the first line (but which is a shading rather than a line), and which dark streak continues less directly to the second shade-line.

It is thus very evident that both forms are known to continental authors as *Crambus contaminellus*. Certainly to me they look two distinct species, but whether that is so, or that they are only two widely-divergent forms of one species, further investigation and a knowledge of the respective life-histories only can prove. Of course, if two species, Hübner's figure, as representing the Blackheath and Deal form, must stand by priority as *Crambus contaminellus*, and a new name be found for the Preston form.

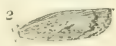
With Mr. Stainton's continental specimens he had one from Zeller; this was not so strongly marked as the Preston insect, but more nearly approached that form than the Blackheath, although it wanted the characteristic dark shade between the nervures.

The figure given (Entom. 53) of these is not good or characteristic of the Blackheath insect; the first line is much too oblique, and it is not bifurcate as there shown. I therefore append sketches to better explain my meaning.

No. 1.—Anterior wing of male Blackheath *contaminellus*, male, picked, as showing the lines in their most distinct form. Colour, unicolorous warm brown.



No. 2.—Anterior wing of ditto, female, picked, as showing narrow wing, produced tip, and broken first line. Colour, unicolorous grey.



No. 3.—Anterior wing of Preston insect, showing streak. Colour, varied shades of warm brown and black-brown.



All life-size.

There is one very strong character in the Preston insect, to which I called Mr. Stainton's attention, and he said at once that

it was very important. The hind wing is generally paler, and has a band or shade of dark grey running parallel to hind and inner margins, which is not usual in the Crambidae.

I shall feel particularly indebted for specimens of *Crambus contaminellus* from any other British station, and would do all I can in return for the favour.

6, Lewisham Road, Greenwich, March 8, 1886.

TINEÆ TAKEN NEAR CAMBRIDGE.

BY WILLIAM FARREN.

THE following is a list of the Tineæ taken by my son, A. W. Farren, and myself around Cambridge, unless otherwise specially mentioned, during the past season. Our range of locality near home is really very limited, though not to that, but to the continued strong easterly winds which prevailed all summer, must be attributed the absence of several rarities we ought to have captured.

Diurnea jagella, at lamps; dark fuscous gray varieties.

Epigraphia steinkellneriana, scarce; bred and beaten from hawthorn.

Fumea intermediella, two in Wicken Fen,—one at sunset and one at sunrise; this species is new to the fen.

Xysmatodoma melanella, one on trunk of willow, Ditton Fields.

Scardia parasitella, bred from apple bark. *S. granella*, beaten from thatch. *S. cloacella*, beaten from thatch, and bred from decayed wood and bark.

Blabophanes rusticella, bred in abundance from birds' nests.

Tinea tapetzella, in its usual haunts—outhouses. *T. misella*, a good series, beaten from and flying about thatch. *T. pellationella*, at home. *T. fuscipunctella*, at "Catch-'em-Hall," as we have christened our three-roomed cottage in the fen. *T. pallescentella*, at home, most plentiful at Christmas time. *T. lappella*, bred plentifully from birds' nests; light ochreous and dark fuscous varieties.

Tineola biselliella, at home; rather too much so.

Lampronia rubiella, one in Wicken Fen.

Incurvaria muscicella, abundant, flying in the sunshine along hedgerows; some nicely marked vars.; one, a female, with a third white spot on the costa, between, and as large as, the two dorsal spots.

Micropteryx calthella, in king-cups (*Caltha palustris*) *M. thunbergella*,

common in Scotch firs. *M. semipurpurella*, scarce, hedgerows alongside plantations. *M. subpurpurella*, scarce, hedgerows alongside plantations.

Nemophora swammerdammella, scarce, beaten from beech, Gog and Magog Hills. *N. metarella*, a nice set, flying from sundown till dark on sheltered sides of willow bushes; did not come to light: Wicken.

Adela cræsellæ, on privet blossoms, in the sunshine.

Nematois cupriacellus, one female on the "Breck Sands."

Swammerdamia cæsiella, *S. oxyacanthella*, *S. pyrella*, bred from whitethorn. *S. combinella (apicella)*, beaten from mixed hedge, Gog and Magog Hills.

Hyponomeuta plumbellus, beaten from sloe bushes, Upware. *H. padellus*, bred from whitethorn: scarce this year, though I have known the hedgerows stripped in some seasons by the larvæ. *H. cagnagellus*, beaten from *Euonymus*, Upware.

Anesychia funerella, flies at dusk: one hot night I took five dozen in less than an hour, all males, but I never got so many as a dozen on any other night: seldom came to light; also bred from comfrey (*Symphytum*); I have seen six or eight larvæ on the under side of a comfrey leaf,—some full fed, others only a day or two old. *A. decemguttella*, found sitting on the plants of *Lithospermum* by day; many larvæ in September from same plants.

Plutella cruciferarum, very common; an annoying little moth, but in fine variety; a large ochreous brown var. occurs in the fen. *P. porrectella*, a fine series bred from dame's violet (*Hesperis matronalis*).

Cerostoma vittella, beaten from elm hedge.

Harpipteryx xylostella, bred from honeysuckle.

Orthotelia sparganella, at light in the fen.

Phibalocera quercana, bred from hawthorn, &c.

Depressaria flavella, bred from *Lysimachia vulgaris*; also at sugar and light. *D. arenella*, at sugar, and beaten from thatch. *D. propinquella* and *D. subpropinquella*, beaten from thatch. *D. rhodochrella*, one from thatch; I saw this rather common one season about eight years ago in my garden. *D. alstriemeriana*, beaten from thatch. *D. purpurea*, scarce, along hedgerows and from thatch; this used to be very common here twenty-five or thirty years ago, probably is now if I hunt the old places. *D. liturella*, two large, dark, and finely coloured specimens, bred from willow shoots in fen; probably ascended the willow bushes to lay up for pupation, although my experience is that the larvæ of the *Depressaria*, like most other larvæ, go down for that purpose. *D. conterminella*, bred from osier and willow shoots; it seems almost impossible to catch the imago in fine condition; seems to "waste" as soon as it flies. *D. angelicella*, a large series bred from *Angelica*; some nice vars., sometimes eight or ten larvæ in one head. *D. ocellana*, bred from willow shoots, finely marked, also at sugar especially, and thatch. *D. yeatiana*, bred from rolled-up leaves of

Peucedanum palustre, and many from old sedge stacks. *D. applana*, rather too common in thatch; but one very fine, almost black, among other vars. *D. ciliella*, bred from *Peucedanum palustre*, and beaten from old sedge stacks, &c.; in great variety, from light sandy red through shades to blackish brown, some beautifully mottled. *D. albipunctella*, from thatch; scarce. *D. weirella*, one only from thatch. *D. charophylli*, bred from umbels of *Charophyllum temulum*. *D. heracleana*, bred from *Heracleum sphondylium*, also abundant in thatch.

Gelechia rilella, one only, beaten from thatch. *G. pinguinella*, one at light in the fen. *G. muscosella*, two bred from willow. *G. ericetella*, on the "Breck Sands." *G. divisella*, four or five in fine condition at light. *G. soroculella*; one in the fen.

Brachmia lathyrella, bred freely from *Lathyrus palustris*, also at light and mothing in the evening; I found a patch of *Vicia cracca*, with what I expect is the larvæ of this species; I could see no difference, and they fed exactly the same as those on *Lathyrus*; I am keeping them separate.

Brytrophia terrella, common on the fen banks. *B. desertella*, rare on the fen banks. *B. politella*, one only, rare on the fen banks. *B. basaltinella*, beaten from thatch; a skittish little thing to catch; is not likely to die out for want of self-preservation.

Lita acuminatella, two females and a male on the fen. *L. fraternella*, a long series bred from shoots of *Cerastium triviale*; larvæ feeding from March 24th to beginning of June. *L. marmorea*, rare on "Breck Sands."

Teleia notatella, bred from larvæ on willows, &c., beaten from willows, and at light. *T. sequax*, bred from rock-rose (*Helianthemum vulgare*); also taken at "The Gogs" and "Flem Dyke," flying in the sunshine. *T. dodecella*, beaten from Scotch firs; also two or three in the fen, where there is not the ghost of a fir; these are rather larger and paler than those from fir.

Ergatis subdecurtella, I saw the larva of this feeding in the young shoots of the purple loosestrife (*Lythrum purpurea*), but thought them too small to take; and as I was away for a week, about the only hot one we had all summer, I missed them, for not one could I find when I went back. *E. ericinella*, on the borders of the "Breck Sands."

Doryphora palustrella, a solitary, but fine, specimen at light; this, I believe, was the only one taken during the season. *D. oblitella* (*suffusella*), three, as good as bred, at light, and one bred; these were all that were taken. *D. morosa*, larvæ in young shoots of yellow loosestrife (*Lysimachia vulgaris*); are much blacker bred than caught; came rather freely to light one night: when in the net this is most lively, and worse to box than a flea. *D. lutulentella* (verified by Mr. H. T. Stainton), new to the fens; I took four very fine specimens; two others were taken, and I think went to Mr. W. Warren.

Lamprotes atrella, scarce at light; fens.

Anacampsis tæniolella, at "Flem Dyke." *A. anthyllidella*, one only in the fen; is rather large, and not so well and strongly marked, but I suppose must be referred to this species.

Tachyptilia populella, freely bred, and in great variety, from shoots of sallows.

Ceratophora rufescens, came freely to light just as the day was breaking, some 230 in about an hour; after that flying, and *in copula*, till the sun was well up; larvæ in rolled grass leaves in September, about half fed; never saw this species flying in the evening, nor did it come to light during the dark hours. *C. inornatella*, nothing in the evening till too dark, then for about an hour at light.

Cladodes gerronella, the same remarks apply as in the preceding species.

Parasia metzneriella, bred from old heads of *Centaurea*, and came to light for about two hours after we lit up.

Anarsia spartiella, among broom on the "Breck Sands."

Harpella geoffrella, a beautiful series, beaten from hedgerows in lanes, near Sevenoaks; I shall never forget the first specimen I took of this in 1854, near the same spot; not having seen it before I thought nobody else had, and that it must be new; but I was young then.

Hypercallia citrinalis (*christiella*); I could not resist a run down into Kent to the spot where I took this lovely species half a lifetime ago: after a long and tedious search I found larvæ enough to breed fourteen beauties: but I fancy somebody has been there since I was last, in 1862, for it seems pretty well cleared out.

Ecophora minutella, flying in my breeding and turf shed, at "Catch-'em-Hall." *Æ. fulvigitella* (*glavimaculella*), flying over and settling on flower-heads of *Angelica sylvestris*; larvæ in seeds of same. *Æ. unitella*, bred from plum tree bark. *Æ. fuscescens*, flying about the thatch of "Catch-'em-Hall," as the sun was setting, and in the rays of the setting sun. *Æ. pseudospretella*, common at home and elsewhere; also bred from rice.

Endrosis fenestrella, everywhere indoors and out.

Butalis grandipennis and *B. senescens*, among broom and furze; "Breck Sands."

Glyphipteryx fuscoviridella, common in the meadows. *G. thrasonella*, among rushes in the fen. *G. cladiella*, rather scarce last season in the fen. *G. forsterella* (*oculatella*), one only in the fen. *G. fischeriella*, by sweeping, on the fen edges.

Heliozele (*Tinagma*) *sericiella*, flying in the sunshine along the plantation on Trumpington Road. *H. resplendella*, one only; "Flem Dyke."

Argyresthia nitidella, bred and beaten from whitethorn ; also the plain creamy var. *A. semitestacella*, *A. spiniella*, *A. albistria*, *A. abdominalis*, and *A. retinella*, beaten from willows. *A. præocella*, one only, beaten from mixed hedges.

Gracilaria alchimiella (*swederella*), bred and beaten from ash. *G. stigmatella*, beaten from thatch. *G. syringella*, bred from lilac, six or eight larvæ in a leaf. *G. auroguttella*, one in the fen. *G. imperialella*, larvæ on *Symphytum* ; very difficult to get at the right age ; either too young, or gone.

Ornix anglicella, bred in plenty from whitethorn ; the perfect insect in swarms in the hedgerows. *O. avellanella*, beaten from hazel hedge. *O. guttea*, one beaten, near Sevenoaks.

Coleophora fabriciella, rare in the fen ; by mothing at twilight, and in the first hour at light. *C. melilotella*, the same remarks apply to this species, which I think is new to the fen. *C. anatipennella*, beaten from willows, and at light ; fen ; rare. *C. onosmella*, on the "Breck Sands," where the viper's bugloss is plentiful. *C. troglodytella*, on *Eupatorium cannabinum* in the fen ; seems rare. *C. lineolea*, very common all round Cambridge on *Ballota nigra* ; not so freely on *Stachys sylvestris*. *C. murinipennella*, taken freely at light in the fen, at all hours of the night. *C. caspitiella*, very abundant near Cambridge ; not so common in the fen, in fact rather scarce. *C. laripennella* (*annulatella*), two, in fine condition, at light in the fen ; new to the locality. *C. apicella*, at light in the fen ; came only during the first hour or so. *C. argentula*, on seed-heads of yarrow round Cambridge. *C. juncicolella*, by sweeping ; "Breck Sands." *C. albitarsella*, common all round Cambridge, also on the fen. *C. nigricella*, in every whitethorn hedge. *C. fuscadinella*, in every elm hedge. *C. gryphipennella*, rather scarce at Cambridge on wild rose. *C. siccifolia*, I found about thirty full-fed larvæ of this at "the backs," in June, a place I have "haunted" all my life and never saw it before ; true, I had always looked for it before in July. *C. riminella*, not at all common on osier and willows. *C. lutipennella*, two beaten from elm at Wicken. *C. badiipennella*, one beaten from elm at Wicken.

Cosmopteryx lienigiella, rare, flying about reeds in the fen in the evening ; a few came to light directly we lit up ; larvæ later on in reed flags. *C. orichalcea*, a good series, one warm evening, by sweeping : larvæ in September, in two or three sorts of grasses. I look upon this species with a sort of fatherly love, as I took two specimens at the back of Stubby Copse, in the New Forest, the same week that Brown took his one in the fen, when it was new to science.

Batrachedra præangusta, common on the trunks of Lombardy poplars, both at Wicken and Cambridge.

Chauliodes illigerellus, bred from *Angelica*, and caught by mothing in the evening, and at light.

Laverna epilobiella, larvæ common in shoots of *Epilobium*. *L. decorella*, one from thatch, in March. *L. rhamniella*, beaten from buckthorn in the fen. I ought to be able to add *L. phragmitella*, but where it used to be abundant years ago in Burwell Fen, they cut all the herbage,—reed-mace, and all,—every year; and *phragmitella* “is gone for aye,” I fear, from there.

Chrysoclysta aurifrontella, was plentiful in one bit of hedge at Whittlesford, but rare elsewhere.

Elachista luticomella, a few under a sheltered hedge in our lane, Wicken. *E. cinereopunctella*, *E. nigrella*, *E. bedellella*, and *E. obscurella*, were all taken sparsely in and about the fen, but the Elachistidæ were never plentiful all the season, owing I expect to the cold evenings with east winds. *E. cerussella*, flying over the bare spaces in the fens; common. *E. rhynchosporella*, captured in same way as last, but rare. *E. rufocinerea*, abundant near Cambridge. *E. argentella*, I did not see half a dozen all through the season.

Lithocolletis roboris, bred from oak leaves from Girton. *L. pomifoliella*, bred from hawthorn leaves; the most abundant species here. *L. spinicolella*, bred from sloe leaves. *L. fuginella*, bred from beech. *L. viminetorum*, bred from osier from Ditton. *L. quercifoliella*, bred from oak; common. *L. messaniella*, bred from evergreen oak; swarms where it occurs. *L. corylifoliella*, bred from hawthorn; is not very common. *L. viminiella*, from willow. *L. heegeriella*, rare; from oak leaves. *L. cramerella*, common; from oak leaves. *L. schreberella*, bred a nice lot of this handsome—but troublesome to pin—species from elm. *L. tristrigella*, bred from elm. *L. trifasciella*, from honeysuckle; does not seem so common as it used to be.

Phyllocnistis suffusella, bred from “the slimy looking mines” of Lombardy and common poplar leaves, and aspen. *P. saligna*, bred from smooth-leaved osiers.

Cemistoma laburnella, common on laburnums. *C. scitella*, not common on hawthorn.

Opostega saliciella, a single specimen in the fen. *O. auritella*, a nice series of about twenty at twilight and at light, for a short time early.

Bucculatrix cratægi, beaten from hedges. *B. boyerella*, on elm trunks. *B. frangulella*, beaten out of buckthorn on the fen.

A few specimens bred of *Nepticula atricapitella*, *N. ruficapitella*, *N. anomalælla*, *N. pygmæella*, *N. pomella*, *N. oxyacanthella*, *N. ignobilella* (I had a good lot of larvæ of this, but nearly all were ichneumonised), *N. gratosella*, *N. marginicoella*, and *N. aurella*, close the list.

This is, after all, by no means a bad list, considering that we also collected the other divisions of Lepidoptera, and it serves to show what may be done in a single year.

AN AFTERNOON AMONG THE BUTTERFLIES OF
THURSDAY ISLAND.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., F.R.G.S.

(Concluded from p. 36.)

Ornithoptera priamus, Linn., var. *pronomus*, Gray: three or four of these most magnificent butterflies were seen, and a pair, a male and female, in perfect condition, were captured. I was also fortunate enough to find two chrysalids and two full-grown larvæ, and saw many smaller larvæ, which I did not take, as their food-plant will not keep fresh for more than a couple of days on board ship. The larvæ were feeding upon a kind of *Ipomœa*, which was twining itself among and over the brushwood, some at a considerable height, while others were feeding upon portions of the plant which were trailing on the ground, and I nearly trod upon one of the largest larvæ. The following is a description of a full-grown larva:—Length, two inches and a half; tapering slightly towards each extremity; central segments thickened; comparatively short and obese; smoky black, with a tinge of madder-purple; head black and shining, with a narrow white v-shaped mark on the face; upon the crown of the 2nd segment a crescent-shaped shining black plate, and between this and the head is the nuchal aperture, through which, when the larva is irritated, is emitted a pair of short thick carmine-coloured tentacles; a subdorsal row of finely-pointed spines on each side, the spines rather long, and those on the posterior segments pointing backwards; tips and base of spines black, intermediate portion scarlet, except on 8th segment, where the base of spine is white, and from thence springs a broad oblique white stripe pointing forwards, and terminating at the spiracular region; a row of black spines just below the spiracles; upon 3rd, 4th, and 5th segments an additional spine between the subdorsal and spiracular row; a short black blunt tubercle on 2nd segment upon each side of the face; a short black spine above each leg and claspers, which are shining black. The chrysalis, which is of an amber-brown colour, is slightly angulated, with a blunt subdorsal black-tipped spine on each side of the abdominal segments, and some small black spines on back of thorax; a large and almost triangular orange-yellow blotch upon back of anterior

abdominal segments ; wing-sheaths dark reddish brown, with the nervures well marked. These larvæ differed in no way from larvæ I have taken at the Duke of York Islands and New Britain, and which produced the blue variety *urvilliana*, Guer., and the usual golden-green form ; and I feel quite convinced that Kirby is correct in referring the five Australian varieties, and several others from New Guinea, Woodlark Island, Batchian, &c., to *Papilio priamus*, Linn., of which there is little doubt that they are merely local varieties. The chrysalids are also identical. Those I found were attached to the midrib of a very large leaf of some forest tree, and sometimes at a considerable distance from the food of the larvæ. Before suspending itself, the larva takes care to securely fasten the stem of the leaf at its base to the branch of the tree with strong threads of silk.

Papilio polydorus, Linn., one of the most abundant species met with. It flies in a light airy manner, generally quite straight, like *Eurycus* or *Acræa*, and appears to be a particularly easy butterfly to catch ; nevertheless it has a trick of dropping suddenly or twisting to one side, as one makes a stroke at it, and instead of having it in your net, as you confidently expected, you see it hurrying off among the brushwood or careering aloft far out of reach. *P. erithoneus*, Cram., one or two seen. *P. capaneus*, West., several observed, and one or two worn specimens captured ; young larvæ upon. *P. erectheus*, Don., common ; and larvæ of various sizes upon orange trees in the garden of Mr. Chester, P.M. These specimens were of the New Guinea form, which is larger and rather differently marked than those from New South Wales. *P. sarpedon*, Linn., several seen ; a rapid flyer. *P. agamemnon*, Linn., two or three seen, and one captured.

Eurycus cressida, Fabr., numerous.

Terias australis, Wall., *T. hecabe*, Linn., *Terias* sp., common amongst high grass, &c.

Pieris ega, Boisd., one male only.

Callidryas crocale, Cram., several.

Danais ajjinis, Fabr., not uncommon in the forest, where it was fond of alighting upon the extremities of dead twigs, a habit which is common to all the Danainæ. *D. petilia*, Stoll, common, but local.

Euplœa sylvester, Fabr., very common in the forest, where it

delights to sit in little family parties upon some dead bough. *Euplœa* sp., possibly a local variety of *tulliolus*, Fabr.

Junonia orithya, Linn., common; but very wary and difficult to catch. *J. vellida*, Fabr., common.

Precis zelima, Fabr., several.

Rhinopalpa sabina, Cram.; this fine species was not uncommon in the forest, and was in good condition. They were usually to be found in pairs, though sometimes they were in family parties of six or seven, and were fond of settling upon the under side of a large leaf near the ground, and flew out suddenly as one passed; as a rule, if one kept quiet, they almost invariably returned to the same spot.

Doleschallia bisaltide, Cram., common. This butterfly, during the hottest part of the day, flies high, and keeps well out of reach: but towards the evening, or when passing clouds obscure the sun, it descends, and may then often be seen at rest on the under side of a leaf, when they may be easily caught if one approaches quietly. They are very pugnacious in their habits. One will take up his position upon a leaf at the extremity of some lofty branch, and from thence starts off and gives battle to every passing butterfly, returning, after the encounter, to its original position.

Hypolimnas alimena, Linn., plentiful, and in fine condition. *H. lasinssa*, Cram., common.

Neptis consimilis, Boisdu.; this pretty species was tolerably numerous. It flies in a very airy manner, giving three or four flaps with its wings, and then floats gracefully to a leaf, where it settles with wings fully expanded. *N. shepperdi*, Moore. The above remarks apply to this species also.

Melanitis leda, Linn., a few only.

Mycalesis perseus, Fabr., a few, but in poor condition. *M. terminus*, Fabr., common, and in fine condition. These two species were found among high grass by the edge of the forest.

Ypthima arctous, Fabr., common with the above.

Cænonympha sp., common. This species also occurs near Sydney; but is unnamed in the local collections I have had access to.

Lycæna platissa, Herr.-Schaff., common. *L. salamandri*, Macleay, W., a few. *L. pygmæa*, Snell, one example. *Lycæna* sp.,

near *erinus*, Fabr., one only. *Lycæna* sp., three examples. *Lycæna* sp., one example.

Hypochrysops anacletus, Feld., three specimens of this beautiful species. *H. apelles*, Fabr., one example. *H. phorbas*, Fabr., several.

Amblypodia centaurus, Fabr.; this brilliant species was common, flying to and fro in front of low bushes. It was difficult to obtain in good condition, as it is very pugnacious in its habits, and both sexes are to be continually seen engaged in warfare. *A. micale*, Blanch., two or three.

Ismene exclamationis, Fabr., several. *Ismene* sp., several.

Pamphila augiades, (?) Feld., several. *Pamphila* sp., one or two. *Pamphila* sp., several.

Apaustus agraulia, Hew., common.

The above forty-eight species were the result of an afternoon's collecting at, I believe, a not very favourable time of the year. If so much was to be done in such a short time, it is reasonable to suppose that the list would have been very much increased if I could have had a few more days collecting, and if it had been at a more favourable time of the year. From what I saw of Thursday Island, I should judge that the larger islands, which are all well wooded, particularly Prince of Wales Island, would produce a greater variety of Rhopalocera, and all the species that have been taken at Cape York and other parts of the North Coast of Australia would be found upon them, as well as many New Guinea species, which, up to the present time, have not been recorded as Australian. I can imagine no better place than Thursday Island for a collector to make his head-quarters for a couple of months, for there could be no difficulty in working the other islands, as they are all easily accessible by boat, and there are houses upon all of them, so that comfortable accommodation could most likely be obtained. I am confident that many new species would reward a diligent collector.

In the above list it will be observed that many common species that ought to occur on this island were not observed upon this occasion, such as *Pieris teutonia*, *Danais chrysippus*, *D. erippus*, and others.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LYCÆNA ARGIOLOUS.—I am very much surprised to find from the remarks of Messrs. W. Harcourt Bath (Entom. 29) and J. Jenner Weir (Entom. 50) that *Lycæna argiolus* is not double-brooded in the New Forest and some other localities in the South of England. There are certainly two broods in Essex and Suffolk; but as the individuals of the first brood are much more numerous than those of the second, I am quite disposed to agree with Mr. C. J. Biggs that the latter—like so many other second broods—is only partial. The idea of looking for the larva on mountain ash, crab-apple, and bramble blossoms is so decidedly novel that it could only occur to an original and enterprising mind; but though it has been seen to feed upon the tender leaves and unripe berries of the holly, I cannot help thinking that it is a flower-feeder as a general rule, though this is a difficult point to settle conclusively, as most of the examples which have been obtained in the natural state have been beaten from various trees and shrubs. Mr. Weir mentions that I have found it on *Rhamnus frangula* blossoms, and also that it was found by Mr. G. F. Mathew on flowers of *Escallonia* in June; and in the book from which he quotes ('Larvæ of British Butterflies and Moths,' Ray Society, 1886, p. 188) the Rev. J. Hellins notes its having been found by Mr. W. H. B. Fletcher at Worthing, on flowers of *Cornus sanguinea*. I have also beaten it from *Euonymus europæus* flowers, and strongly suspect that we have by no means exhausted the list of its food-plants at present. The mayor of Colchester, Mr. Laver, has drawn my attention to the extreme partiality of the perfect insect for the flowers of *Aucuba japonica*. In the churchyard of Holy Trinity parish, in this town, there are several of these shrubs, upon which the fruit comes to maturity; and, as *L. argiolus* frequents them in the spring, Mr. Laver thinks that it may assist in fertilising the blossoms; but I have never looked for the larva on this plant, though I have frequently seen the butterflies flitting about it in my own garden. I collected for years in this district without meeting with a single specimen; it then became common for several seasons, but has been comparatively scarce during the past three or four years. Mr. Harcourt Bath seems to consider

that it formerly enjoyed a much wider range than it does at the present day; but my idea is that in favourable seasons it is continually extending its range, whereas when the climatic or other conditions are adverse it is confined very much to headquarters. Here, it is principally found in one or two places where holly is plentiful, and some seasons a specimen is rarely seen elsewhere; but at other times it is to be met with in gardens and lanes throughout the district, and even in the streets of the town; and Dr. Bree has drawn my attention to its periodical abundance about the ivy which grows upon Colchester Castle. Mr. Harcourt Bath's own remarks seem to bear out this view, for he says, "When the butterfly is very abundant it occurs all over the park, and sometimes even in the outskirts, though at other times it occurs only in two or three localities;" and it seems reasonable to conclude that what is happening at Sutton Park and here is also taking place in every county in which the species occurs.—W. H. HARWOOD; Colchester, March 1, 1886.

LYCENA ARGIOLUS.—This butterfly is of regular and tolerably common occurrence in this neighbourhood, where there are few hollies, but ivy is plentiful in the hedgerows. As far as my experience goes there are invariably two broods in the season: the first, late in April or beginning of May, nine-tenths of which are males; the second, in August, sometimes lasting into September, and it was once seen during the first few days of October; I forget the year, but well recollect the circumstance. This latter brood seems to consist principally of females. I have noticed also that this little butterfly seems much attached to a place. There is a small shrubbery at the side of my late residence, containing, amongst other trees and shrubs, *laurustinus* and candleberry myrtles, but not any hollies. When the species was out, although perhaps none might be seen about on the wing at the time, I could yet, in suitable weather, always make sure of taking them at this particular spot, and have been accustomed to sit down and wait for them, as one does for *Apatura iris*. I took as many as seventeen in an hour one morning in this way, several of them off one particular sprig of flowers of the candleberry myrtle, on which shrub, as well as on the *laurustinus*, they were very fond of settling. May not the larvæ possibly feed on either or both of these?—E. SABINE; 22, The Villas, Erith, March, 1886.

SESIA TIPULIFORMIS.—The larva of this beautiful clear-winged moth should be looked for now and next month in the currant twigs; perhaps a few hints as to the easiest way of finding it may be of use. I feel sure that a great many collectors overlook this insect, owing to its singular habits. Select black, red, and white currant bushes that have been pruned every year. Take the shoots that were cut in January or February of the preceding year. These shoots will be found close to those pruned this year. Carefully split them open, and if the larvæ occur in the district it will soon be found, and not far from the end of the shoot, in the winter cocoon. If looked for in the young shoots which grew last year, but very few will be discoverable, for the larvæ decidedly prefer the cut end of the shoot. As an instance of this, I put in about 200 cuttings of the black currant, and nearly all of these contained larvæ the following year, but since then I have been unable to find a single larva in them, owing to the black currants not being pruned. If a larva occurs in an unpruned shoot, it will be seen that it enters the shoot through a bud. I may add that I have cut thousands of the young shoots this year, and could only find two instances of the larvæ occurring in them. I should like to hear whether those who have taken these larvæ find their experience coincides with mine.—R. NEWSTEAD; 63, Philip St., Chester, March, 1886. [Among several of the smaller Sesiidæ the habit obtains of the females depositing their ova round the edge of the bark of recently cut stems of trees, in which the larvæ usually feed. This especially applies to *S. asiliformis* (*cynipiformis*) on the stumps of oaks felled in the previous spring, and *S. culiciformis* in stumps of birch. Smaller stumps appear to be preferred. To successfully find these, prise off the bark during April, when the pupæ may be found towards the end of the month. A better plan still is to saw off about six inches of the stumps where signs of ejected frass indicate the presence of larvæ. Do not keep the pupæ or cut stems too dry, but bright sunshine appears absolutely necessary for the successful development of the moths, therefore, allow the *morning* sun to shine upon the breeding cage containing them, for it is then they emerge.—ED.]

ENDROMIS VERSICOLOR.—In May, 1883, I received eleven ova of *Endromis versicolor*, which were laid in a row, side by side and

touching, on a small twig of birch. On June 1st they all hatched, and it was curious to see how each larva came out of the same end of the egg, and made a similar and perfectly circular hole in it. The egg-shells remained with a beautiful mother-of-pearl gloss on them. The young larvæ seemed very lively and healthy at their birth, and soon began eating the young birch leaves with which I supplied them. Their first change took place on June 9th, the second on June 19th and 20th, the third on June 29th, and the last moult was on July 9th, 10th, and 11th. Thus they seemed to change with great regularity after every ten days, and between each moult they eat heartily but not voraciously, growing rapidly at the same time. One out of the eleven unfortunately died in its "childhood" from some unknown cause. Some two days before spinning up they left off eating and began to lose their brightness of colour, ultimately turning to a dirty, brownish green, with a decided dark pink tint along the back. Before settling on their place for pupation, they became exceedingly restless, crawling about with rapid motion for some hours, and emitting some very wet, dark-coloured excrement. They went down into the earth only about half an inch or so, where they made a loose cocoon of earth and silk. The dates of their spinning up were as follows:—Two on July 22nd, one on the 25th, two on the 27th, two on the 28th, two on the 29th, and one not until August 5th. The first emerged the following 16th of March, and another on the 22nd; both were very fine male specimens. But no more appeared in 1884, although they kept alive. During the winter of 1884-5 I placed the remaining six pupæ (two I had sent away) with some others in a greenhouse kept at a temperature of about 65°, and kept them damp. The result of this experiment was that a fine male emerged on January 21st, 1885; another on the 30th; a female on February 5th; another on the 7th; and a third on the 13th; the sixth died. All were very beautiful specimens, and not in any way crippled.

—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, Feb. 19.

HABITS OF THE LARVA OF *POLIA FLAVICINCTA*.—One summer day of last year I observed that the flowers on several plants of foxgloves (*Digitalis*) in my garden were eaten off, apparently by some larva. At first the depredator was not to be found, but a closer search discovered him stretched at full length on the stalk of the plant, and completely concealed among the im-

mature buds at the top of the spike. Two full-fed larvæ thus found produced imagos of *P. flavicincta*. Last year I observed the same thing, and have also found the larva on the rose and the honeysuckle, in each case feeding upon the flowers, not the leaves.—H. MILLER; Ipswich.

GEOMETRA PAPILIONARIA AT HIGHGATE.—Referring to Mr. A. E. Tonge's note (Entom. 65), I find from my diary that I took two good specimens of the above-mentioned insect in one evening in August, 1877, at the gas lamps near Church Bottom Wood, Highgate. They are both males.—W. J. V. VANDENBERGH; 5, Yale Terrace, Colworth Road, Leytonstone.

LACCOPHRYX CEPHALOTES, Ratz.—At the end of last summer I took an insect which is, without doubt, a male of this interesting species, which differs from all the other genera of Bracons in the attachment of the abdomen; instead of springing from the lower part of the metathorax in the usual manner, it is inserted high up above the coxæ, making the side view very like a *Fœnus*. Ratzeburg wrongly identifies it with Wesmæ's *Opius*, from which it is certainly distinct, as the hind head is very distinctly margined, and, though it is now referred to the Diospilidæ, it does not accord very well with that group. To me it seems to have more affinity with the Ichneutidæ. Its general appearance is very like *Ichneutes reunitor*, and the radial areolet is very little longer than the stigma. The large buccate head and structure of the abdomen make it easy to be recognised. It does not appear to have been taken previously in England.—E. CAPRON; Shiere, Jan. 7, 1886.

ENTOMOLOGICAL SOCIETY AT OXFORD.—I should be very glad if any of your readers could give me particulars of any Entomological Club or Society in Oxford. Also of any hints as to the working of the surrounding country.—L. SURRAGE; Hertford College, Oxford, March 10, 1886.

ERRATUM.—Page 64, line 9, for "opening" read "spinning."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—March 3rd, 1886. R. M'Lachlan, F.R.S., President, in the chair. Mr. J. M. C. Johnston was elected a Fellow, and Cavaliere Piero Bargagli, of

Florence, ormerly Secretary of the Entomological Society of Italy, was elected a Foreign Member. Mr. Pascoe exhibited a curious larva, probably of a *Papilio*, from Paris; and a pupa-case of *Anosia plexippus* (*Danaïs archippus*), from the same locality. Mr. W. J. Williams exhibited, on behalf of Mr. C. Bartlett, a gigantic hairy and spiny larva, perhaps allied to *Gastropacha*, from Madagascar. Mr. C. O. Waterhouse exhibited *Rutela rufipennis*, *Doryphora haroldi*, and some other undescribed species of Coleoptera from Columbia. Mr. Billups exhibited a specimen of *Cholus forbesii*, a South American species, found alive in a horticultural sale-room in London. Mr. Eland Shaw referred to the exhibition, at the last meeting, of *Tettix australis* from New South Wales, and called attention to the fact that the aquatic habits of certain species of the genus *Tettix* in India had been previously recorded by Leopold Fischer. Dr. Fritz Müller communicated a paper on Fig Insects from the neighbourhood of the River Itajahy, South America; and Prof. Meldola exhibited, on behalf of Dr. Fritz Müller, a number of specimens of the insects described in the paper. Mr. E. B. Poulton, M.A., F.Z.S., read "Further Notes upon Lepidopterous Larvæ and Pupæ, including an account of the loss of weight in the freshly-formed pupa." The paper included notes upon points in the ontogeny of *Smerinthus* larvæ, and a description and figure of the bifid and hairy caudal horn in the newly-hatched *Smerinthus populi*. The adult larva of *Acherontia atropos* was compared with that of *Sphinx ligustri*, and the as yet unknown appearance of the former in earlier stages was predicted. Hitherto unnoticed eye-like marks were pointed out in the terrifying attitude of *Charocampa elpenor*, and the terrifying attitude of *Dicranura vinula* was described, and its defensive fluid was shown to be strong formic acid. An eversible gland was described in *Orgyia pudibunda*, and the protection of *Acronycta leporina* was explained by its resemblance to a cocoon and the darkening of its hairs when full-fed. A valvular aperture in the cocoons of *Chloephora prasinana*, &c., was described, enabling the imagos to emerge. There were also notes upon *Paniscus cephalotes*, parasitic on the larva of *D. vinula*, and tables showing the immense loss of weight in the newly-exposed lepidopterous pupæ due to evaporation from the moist skin. Mr. Poulton also exhibited larvæ of *Paniscus cephalotes*. A discussion followed the reading of this

paper, in which Messrs. Kirby, White, Slater, and Poulton took part.—H. Goss.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February* 18th, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Rose exhibited a comparative series of *Bryophila perla*, Fb., from Lea Bridge and Eastbourne, and made interesting remarks thereon relative to variation of the species according to the surrounding locality. Mr. Hall, series of *Cleoceris viminalis*, Fb., and *Xanthia fulvago*, L., both bred from larvæ obtained from Derbyshire, each exhibiting a marked richness of colour unusual in these insects. Mr. South remarked that the series of *X. fulvago* were curious in colour, and one or two of them appeared to be hybrids between *X. fulvago* and *X. flavago*, Fb. Both Mr. Tugwell and Mr. Adkin exhibited *Crambus inquinatellus*, Schiff., *C. contaminellus*, Hb., *C. geniculeus*, Haw., and specimens of the probably new *Crambus*. Mr. Tugwell made some interesting remarks upon the genus. Mr. Adkins said it had been suggested that the Deal insect was *C. poliellus*, Tr., which was found in Germany and Russia. Mr. Billups brought the following species of Coleoptera *Meligethis exilis*, Sturm., and *Anthicus schaumii*, Wool., from Lincoln; *Hydnobius perrisi*, Fair., *Mycetoporus nanus*, Grav., and *Omalium rugulipenne*, Rye, from Hartlepool: also three species from West Africa belonging to the family *Cetoniidae*—*Ceratorhina morganii*, White; *C. grallii*, Buq.; and *C. hornimanii*, White; and read some observations upon his exhibit.

March 4th, 1886. R. Adkin, F.E.S., President, in the chair. —Mr. Billups exhibited a female specimen of *Sirex juvenus*, and read remarks upon this and allied insects. Mr. Wellman exhibited a series of *Bankia argentula*, Hb., from the Cambridgeshire Fens. Mr. Oldham, dark forms of *Epinephele ianira*, L., taken in North Wales. Mr. South, two extreme specimens of *Lycena icarus*, Rott., one of them a remarkably small specimen, the expanse of wings being only ten lines, and the other a large example from Sligo, which measured 1 inch 5 lines. Mr. Frohawk exhibited a long and varied series of *Melitæa aurinia*, Rott., with coloured drawings of the larva and pupa; also specimens of an ichneumon (*Panteles glomeratus*) infesting them. Mr. Tugwell again exhibited specimens of the supposed new *Crambus*, for which Mr. Tutt had suggested the name of

cantiellus. Mr. Tugwell at some length gave his views upon these intricate forms.* There were also exhibits in other branches of Natural History.

REVIEWS.

Our Insect Allies. By THEODORE WOOD. Small 8vo. London: Society for Promoting Christian Knowledge. 1885.

Our Insect Enemies. By THEODORE WOOD. Small 8vo. London: Society for Promoting Christian Knowledge. 1885.

ANYTHING in book-form which helps to foster the rapidly increasing taste for Natural-History study among the general public is to be welcomed.

These two little works are constructed on the same lines, and are pleasantly written compilations. It would, however, have shown better taste if the writer had given his authorities a little more frequently, and not ignored the valuable work done by such eminent entomologists as Miss Eleanor Ormerod and others, which is largely used but not acknowledged.

The books are illustrated plentifully by woodcuts, and ought to largely assist those whose desire is to get rather a general than a scientific knowledge of the subjects discussed. As school prize-books both will recommend themselves.—J. T. C.

Proceedings of the Dorset Natural History and Antiquarian Field Club. Vol. VI. (for 1884). Sherborne. Foolscap 4to. 183 pp.; 7 plates.

THIS volume contains a list of the Lepidoptera of the Isle of Purbeck, by E. R. Banks and Rev. C. R. Digby, which, though evidently very incomplete, gives 40 Diurni and 839 moths. The arrangement of the list is somewhat defective, there being but few authorities given for the various records. The introduction mentions the close connection of the fauna of the island with that of the New Forest, several local insects being common to both, such as *Emydia cribrum*, *Acidalia straminata*, *Eupæcilia ambigua*, &c. This paper is illustrated by a plate, with figures of

* See article by Mr. Tugwell, p. 75 of present number.—ED.

Nephopteryx genistella (coloured), cases of *Coleophora ahenella*, and imago and cases of *C. conyzæ*.

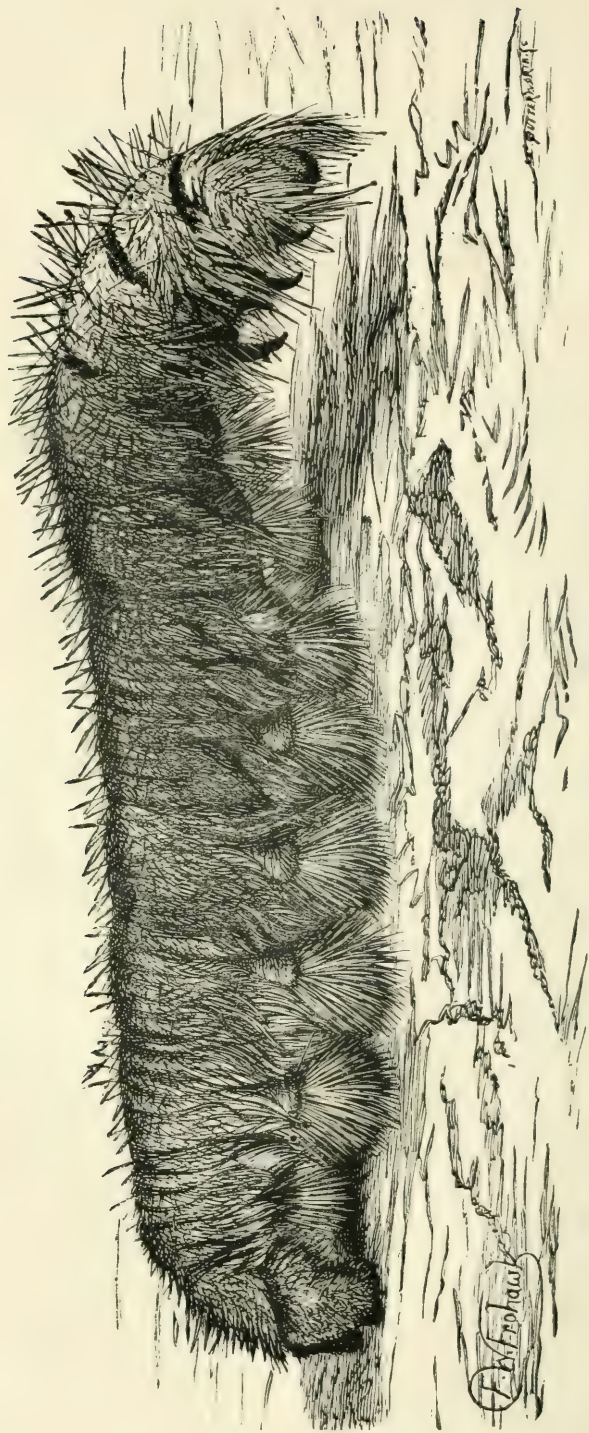
The other paper of interest to lepidopterists is one by the Rev. O. P. Cambridge, illustrated by a coloured plate containing three varieties of *Hypena obsitalis*. There are also ten other papers, including "New and Rare British Spiders," by the same author; "Land and Fresh Water Mollusca of Dorsetshire," six plates; &c.

The County Natural History Field Club of Dorsetshire is evidently in a vigorous condition, and deserves the support of others than local men by the purchase of these 'Proceedings.'—J. T. C.

Abstract of Proceedings of the South London Entomological and Natural History Society for 1885. London: Secretaries of the Society, 1886.

THE steadily increasing vigour and energy of this Society is illustrated by the improved character of their annual "Abstract of Proceedings." From these we gather that the meetings and excursions have been numerous attended, and that the various exhibitions brought by members have been something more than mere cabinet specimens for show, being in most instances accompanied by lengthy notes and observations. The latter include several valuable papers, one of which, by the late President, Mr. R. South, on "Some Observations on Protective Coloration of Lepidoptera," is printed in full at the end of the "Abstract," and will be found well worth perusal, as a thoroughly-prepared digest of the whole subject. Among the other papers and observations are extracts from "Do the Lower Forms of Animal Life feel Pain," by W. H. T. Dobson, which was illustrated by diagrams of the anatomy of the Invertebrata; Mr. Jenner Weir upon some gigantic Arachnida of the order Solpugidæ taken by Mr. G. A. Farini in the Kalahari Desert of Africa. Mr. T. R. Billups had notes and observations at almost every meeting, all of value, upon the orders of Coleoptera and Hymenoptera; Mr. Adkin upon the life-history of certain Geometræ and other subjects; Mr. Step on the Fresh-Water Mussels, &c.

This society is well worthy of entomologists and naturalists generally now that the council has undertaken the valuable work of forming a general list of the fauna of the counties south of London, and those who are not already members cannot do better than join its ranks.



A GIANT LEPIDOPTEROUS LARVA.

(NATURAL SIZE).

J. H. F. H. H. H.

THE ENTOMOLOGIST.

VOL. XIX.]

MAY, 1886.

[No. 276.

AN AFRICAN LEPIDOPTEROUS LARVA.

THE drawing issued with this number of the 'Entomologist' is from a larva which was found in a bottle of zoological "mixed pickles," sent in spirits of wine, from South Africa. The species is unknown. Although to the European entomologist this may seem a veritable giant among caterpillars, it is by no means an uncommon size for Africa. There are several subtropical Bombyces which nearly or quite reach it in bulk, while the larva of *Sphinx desmoulinii* at times even exceeds this size. This latter larva is one of the most interesting found in Africa, for unlike the Sphinges generally it is furnished with long black spines on each segment, which are much more formidable looking than the usual anal spine of the group. At first sight one does not see the advantages of these spines in a glaucous larva, but we know that in their younger stages the larvæ of *S. desmoulinii* are in appearance almost identical with the nauseous and acrid larvæ of certain Acraeidæ, which are never eaten by the usual insect enemies. These are also spined in like manner; and it is undoubtedly one of those cases of self-protection by natural mimicry which are so exceedingly interesting.

We are indebted to the editor of the 'Field' for the use of this woodcut.

JOHN T. CARRINGTON.

TEPHROSIA CREPUSCULARIA AND *T. BIUNDULARIA*.

BY J. W. TUTT.

I THINK many of our entomologists will disagree with the remarks of your correspondent the Rev. G. A. Smallwood (Entom. 39) that *Tephrosia crepuscularia* and *T. biundularia* cannot be definitely distinguished. Perhaps they cannot, very well, in a written description; but there is a good deal in the general appearance of the insects which serves to distinguish these moths as the distinct species I believe them undoubtedly to be. I believe, too, if the times of appearance were carefully studied that mistakes would be few and far between. In our southern woods *Tephrosia crepuscularia* occurs in March and the early part of April; these are generally of a large size. A second brood occurs in nature in the middle of July; these are much smaller, not larger than ordinary *T. luridata* (*extersaria*), whilst the first brood are about the size of an average *T. consonaria*. The markings of these may be fairly called a warm brownish grey; and in the different forms I have from various localities, where I have no doubt of the date, this remark as to colour holds good.

Tephrosia biundularia occurs on the wing in the latter part of May and in June. In an ordinary season the last fortnight of May can be generally depended on to get fine specimens. The typical *T. biundularia* are much whiter in ground colour than *T. crepuscularia*,—especially is this the case with the females,—and, although slightly marbled with pale brown, this colour seems independent of, and does not form a part of, the ground colour, as in the allied species. The black lines in *T. biundularia* seem more decidedly black and sharply marked (probably owing to the cleaner ground colour) than in *T. crepuscularia*.

The different intermediate forms leading up to the beautiful varieties obtainable in these species will perhaps show more clearly what I mean, when I say that generally these forms of *T. crepuscularia* lead up to insects totally suffused with dark brown, and in *T. biundularia* they lead up to specimens which, in their extreme forms, are totally suffused with blackish grey. I have a beautiful series of this latter insect, the varieties coming chiefly from Barnsley and Derby. Those from Barnsley are

dark and well marked, but are not of so deep or rich a colour as those from Derby; but yet I believe in every case the black predominates over the brown. I believe, however, if our entomologists would keep distinct all specimens captured during March and the early part of April, and in the north up to the end of that month, from those captured during the month of May and June, and compare them, they would find a very considerable difference; and if in exchanging these species we were to get dates from our correspondents, we should be less liable to mistakes, and in time, by using a little discretion, get a fairly authentic series of these undoubtedly difficult species.

Of course in a very early season, as in 1882, both species will occur earlier; but the fact remains that the earlier *T. crepuscularia* is nearly or quite over before *T. biundularia* puts in an appearance. It was so in that season when *T. crepuscularia* occurred at the end of February, and *T. biundularia* at the end of April; but there was no mistaking the species. It has often struck me that these two moths are sent away by entomologists to correspondents in mistake, as much through the discrepancies in the descriptions given in the 'Manual' and in Newman's 'British Moths' as from want of care in distinguishing them. No one, I think, can compare them without seeing how much at variance the descriptions are. Newman states in his description of *T. crepuscularia*, "yellow-brown tinge; appearing in April"; I think this applies well to our earlier species, generally known as *T. crepuscularia*. Of *T. biundularia* he says, "grey; occurring in April, and generally again in July"; yet says that "eggs were laid by captured female from 21st to 27th of May;" thus proving the proper time of appearance to be the latter half of May. He further states that the larvæ hatched on 5th of June, but does not say that they produced imagines the same season. His description applies well, however, to our paler species occurring here at the end of May and beginning of June. Now what I beg to suggest is, that it is the earlier browner species, "*crepuscularia*," that is double-brooded. It is double-brooded in our Kent woods; and Mr. Ovenden, of Strood, has more than once bred the July brood; and I capture the second brood of *T. crepuscularia* every season in the woods near Rochester, within a week or two of the disappearance of *T. biundularia* from the tree-trunks.

In Stainton's 'Manual' the description of *T. crepuscularia* and *T. lariciaria* (*biundularia*) are so much alike that it is difficult to say which is meant; but if anything, I should say *T. lariciaria* is given as the browner species, and thus agrees with Newman's *T. crepuscularia*. This is borne out by the date of appearance, which is given as the end of March to the beginning of May, which time agrees with the appearance of Newman's *T. crepuscularia* in our woods. He further states, under the head of *T. crepuscularia*, "appears April and beginning of May," showing that nothing was apparently known then of our end of May or early June species, or if so that this was meant for the late species.

I cannot help thinking, that with such a mixture as this to start with, it is any wonder that even good entomologists go wrong. Newman describes the early species, and gives April as its date only (no mention of its being double-brooded); he then describes the late one, and gives the date for this also as April, and again in July, making this the double-brooded species. It seems to me quite clear that his description applies to a moth which does not generally occur until the middle of May, and which, so far as I know, is not double-brooded, but comes between the two broods of the closely-allied species, which he gives as single-brooded.

The 'Manual' treats them both as single-brooded species, and leads us to believe that neither *T. biundularia* (*lariciaria*) or *T. crepuscularia* occur after the beginning of May. The fact is they both do,—the *only* brood of the later species, and the *summer* brood of the early one. If some older entomologist, who knows more about the matter than I do, can tell us whether we are right or wrong in calling the earlier and double-brooded species *T. crepuscularia*, and the single-brooded intermediate species *T. biundularia*, or not, I am sure many entomologists besides myself would offer their hearty thanks. I have called the early species throughout *crepuscularia*, because in Mr. Coverdale's collection I find German specimens, agreeing with our early ones, labelled *Tephrosia crepuscularia*; and I have assumed that on the Continent the early brood is so known.

Merrin's 'Lepidopterist's Calendar' also assumes that the earlier species is *T. crepuscularia*, and the later one *T. biundularia*; and curiously enough he does not notice that either is

double-brooded, although it states that the larvæ of the earlier species occur in August, whilst that of the later species can be found in June and July.

Rayleigh Villa, Westcombe Park, S.E., February, 1886.

[Of the five insects embraced in the genus *Tephrosia*, three of them—*consonaria*, Hb., *crepuscularia*, Hb., and *biundularia*, Bork.—bear such a strong resemblance to each other that mistakes in their identification are apt to occur. Typical *consonaria* is readily separated from its near allies; but some of the forms of this species occasionally met with are perhaps not so easily distinguished therefrom. The two insects known as *crepuscularia* (double-brooded) and *biundularia* are so closely similar that their separation is always a matter of no small difficulty to many. *Crepuscularia* and *punctularia*, Hb., have a co-extensive area of distribution in Europe, *consonaria* is found in all parts of Central Europe, except perhaps Holland and Russia; its range also extends eastward to the Amoor. *Luridata*, Bork. (= *extersaria*, Hb.), is also a Central European species, but it does not appear to occur in North Russia or North Germany. *Biundularia* seems to be confined almost entirely to Germany and Great Britain; as a British insect it is not peculiar to any particular portion of these islands, but occurs pretty generally throughout the kingdom, and is usually found in the same localities as *crepuscularia*.—R. S.]

NOTES ON MICRO-LEPIDOPTERA.

BY ALFRED THURNALL.

DURING the past season of 1885 I have taken and bred a good many species amongst the Tortrices, and perhaps the following list may be acceptable to some of your readers, as an encouragement for them to work out this group for themselves.

Tortrix podana, *T. xylosteana*, *T. rosana*, *T. heparana*, *T. ribeana*, *T. corylana*, *T. unifasciana*, *T. viridana*, *T. ministrana*,—all the foregoing common, and generally distributed. *T. sorbiana*, two bred from birch, Wanstead. *T. forsterana*, six bred from larvæ obtained at Whittlesford; spun up in ivy leaves.

Dichelia grotiana, a few beaten from birch at Wanstead in July.

Peronea sponsana, common at Loughton amongst beech. *P. comparana* and *P. schalleriana*, six of each beaten from blackthorn, August 15th. *P. variegana* and *Teras contaminana*, generally common amongst whitethorn.

Dictyopteryx leflingiana, *D. holmiana*, *D. bergmanniana*,—all generally common.

Argyrotoxa conwayana, common amongst privet bushes.

Ptycholoma lechæana, bred and beaten from birch, &c.

Penthina corticana, common on birch trunks, Wanstead. *P. pruniana*, *P. betulatana*, *P. ochroleucana*, *P. variegana*,—all fairly common, Loughton, &c. *P. gentiana*, a score bred from teasle-heads. *P. sellana*, one at Box Hill, July 5th. *P. fuliguna*, a series bred from larvæ obtained at Wicken in May; and *Antithesia salicella*, two only at Wanstead, on willow.

Hedya ocellana and *H. neglectana*, very common almost everywhere. *H. aceriana*, two only on poplars, Wanstead.

Spilonota trimaculana, *S. roborana*, and *Pardia tripunctana*, common amongst wild roses.

Aspis udmanniana, a series bred from bramble.

Sericoris urticana and *S. lacunana*, swarming almost everywhere.

Roxana arcuana, not rare at Loughton among bracken.

Orthotania striana, on heathy ground, not rare.

Eriopsela fractifasciana, four at Box Hill, May 5th.

Cnephiasia musculana, a few specimens only, Loughton, May.

Sciaphila nubilana, *S. subjectana*, *S. virgaureana*,—all very common, and generally distributed.

Capua favillaceana, not common, end of May.

Bactra lanceolana, generally common in marshy places.

Phoxopteryx uncana, generally common in heathy places. *P. biarcuana*, one beaten from salallows, Loughton, June 20th. *P. comptana*, swarming in Headly Lane, May 5th. *P. mitterbacheriana*, larvæ common on oak, and more so on beech, at Loughton, Wanstead, &c.

Grapholitha ramella, not common, Wanstead only. *G. nisella*, not common, Wanstead, on aspens. *G. nigromaculana*, larvæ common in flowers of ragwort. *G. subocellana*, common amongst willow in July. *G. trimaculana*, swarming amongst elm, Wanstead.

Hypermeecia cruciana, beaten out of salallows, Loughton.

Batodes angustiorana, swarming round oaks, Loughton, &c.

Padisca bilunana, common on birch trunks. *P. corticana*, common on oak trunks everywhere. *P. profundana*, a few from oak and whitethorn. *P. occultana*, two beaten from fir, Headly Lane. *P. solandriana*, common amongst birch trees.

Ephippiphora cirsiiana, a series bred from thistle-stems. *E. pflugiana*, two bred from pupæ taken at Whittlesford. *E. brunnichiana*, larvæ common in coltsfoot roots, December. *E. fenella*, larvæ common in

mugwort roots, December. *E. nigricostana*, a series bred from larvæ taken at Whittlesford, and I have since (December 15th) found it at Wanstead in *Stachys* roots. *E. trigeminana*, fourteen bred from ragwort roots. *E. obscurana*, one at rest on an oak, Wanstead, June 7th.

Semasia ianthinana, a few larvæ, of what I suppose to be this species, feeding with *Laverna atra* in hawthorn berries, Loughton, September 4th. *S. rufillana*, larvæ very common in *Daucus carota* seed-heads, September, on railway banks. *S. waberiana*, not common here, two near Loughton.

Coccyx strobilella, bred from spruce fir cones, May. *C. splendidulana*, three beaten from oak, Loughton. *C. argyrana*, very common on trunks of oak. *C. tadella*, swarming among spruce firs. *C. nanana*, one only in Headly Lane, July 5th.

Retinia buoliana, generally common amongst Scotch firs. *R. turionana*, one bred, together with a lot of ichneumons from full-fed larvæ, taken near Box Hill, April.

Carpocapsa grossana, six beaten from beech at Loughton, June 29th; three taken in Headly Lane, July 5th; larvæ very common in beech nuts at Loughton in October.

Opadia funebrana, larvæ very scarce this season in plums.

Endopisa nigricana, larvæ very common in sweet-pea pods, Whittlesford.

Stigmonota leguminana, one beaten from blackthorn, Loughton, June 28th. *S. perlepidana*, a few among vetch at Loughton. *S. nitidana*, larvæ common on oaks at Wanstead. *S. flexana* (*weirana*), larvæ common on beech at Loughton. *S. regiana*, a series bred from sycamore bark, Wanstead. *S. roseticolana*, four bred from about forty larvæ found feeding in the "hips" of the wild rose, September, 1884. *S. germarana*, one beaten from oak, Loughton, June 28th.

Dicrorampha petiverella, larvæ very common in yarrow roots. *D. politana*, larvæ not common in yarrow roots. *D. simpliciana*, rather local in mugwort roots.

Pyrodes rheediella, a few beaten from whitethorn at Loughton.

Catoptria albersana, one seen amongst honeysuckle, Brentwood. *C. ulicetana*, common in every furze bush, and very variable. *C. hypericana*, common at Box Hill, Whittlesford, &c., amongst *Hypericum hirsutum* and *H. perforatum*. *C. cana* and *C. fulvana*, a few specimens only at Box Hill, in July. *C. candidulana* and *C. amulana*, larvæ common on the banks of Thames.

Symæthis oxyacanthella, common amongst nettles, &c.

Eupæcilia nana, very common amongst birches, Wanstead, &c. *E. maculosana*, very common amongst wild hyacinth. *E. angustana*, swarming in hundreds over ling at Loughton. *E. udana*, larvæ common in stems of *Alisma plantago*, Hackney Marshes, &c. *E. notulana*, larvæ, of what I suppose to be this species, in stems and root-stocks of water-mint, November 15th. *E. rupicola*, a series bred from old dead stems of hemp

agrimony. *E. roseana*, a series bred from teasle-heads from Brentwood. *E. ciliella*, at Box Hill, but not commonly; larvæ in cowslip seeds.

Xanthosetia hamana, common, but local among thistles.

Chrosis alcella, common at Box Hill, &c.

Lobesia reliquana, very common at Loughton.

Argyrolepis subbaumanniana, two specimens at Box Hill. *A. badiana*, larvæ, together with *Parasia lappella*, in seed-heads of burdock.

Conchylis dilucidana, Box Hill, and a good many larvæ last month in wild parsnip stems at Whittlesford. *C. smeathmaniana*, larvæ common in seeds of yarrow.

Aphelia osseana, common in July, Box Hill, &c.

In addition to the above, I have taken the following species of Crambidæ and Phycidæ:—

Chilo phragmitellus, larvæ very common at Wicken.

Schænobius forficellus, common round ditches at Wanstead.

Platytes cerussellus, very common on Box Hill, July 5th.

Crambus falsellus, six bred from larvæ feeding under moss on an old wall at Whittlesford. *C. pratellus* and *C. pascuellus*, generally common. *C. pinellus*, three at Loughton, from one of which I obtained a good many eggs. *C. perllellus*, a very local insect here; took three on Wanstead Flats, and the var. *dealbella* at Brentwood. *C. selasellus*, not common, Hackney Marshes. *C. tristellus*, very common in damp places. *C. inquinatellus* and *C. geniculeus*, very common, Loughton, &c. *C. culmellus* and *C. hortuellus*, common almost everywhere.

Ilithyia semirubella, not rare on Box Hill in July.

Ephestia elutella, a few specimens in the house.

Cryptoblabes bistriga, beaten from oak at Loughton, both in the larva and imago state.

Phycis betulæ, three or four spun-up larvæ on birch, Wanstead. *P. fusca*, two at Brentwood amongst heath. *P. adornatella*, swarming on Box Hill, end of June. *P. ornatella*, common on Box Hill in July.

Nephopteryx spissicella, larvæ and imagos beaten from oaks at Loughton, &c.

Rhodophæa consociella, a series bred from oak, Loughton. *R. adrenella*, one bred and two beaten from whitethorn, Loughton; the beautiful larva incorrectly described in the 'Manual.' *R. marmorea*, beaten from blackthorn, Loughton. *R. tumidella*, one bred from oak leaves, Loughton.

Aphomia sociella, one at Loughton, and commonly at Whittlesford.

By the above list it may be seen how much may be done by anyone who, even like myself, has only a few hours to spare in each week to devote to collecting.

LEPIDOPTERA IN NORTH-WEST IRELAND.

BY PERCY H. RUSS.

ON the whole the past season was a fairly good one in Sligo. The early portion was undoubtedly bad; cold and windy weather prevailed throughout the sallow season; very few insects visited the blossoms, and those only of the commonest; *Tenioecampa gothica*, *T. incerta*, *T. stabilis*, and *Anticlea badiata* were the only ones taken by me. April was no better than March, but in the early part of May things began to improve; still they were very bad, and Mr. Willitts, of Sheffield, collecting a few miles from me, for Col. Cooper and Mr. Kane, wrote to say he would come and try my neighbourhood, as he could take nothing where he was. The dwarf sallows on the sand-hills were then in full blossom, so we tried them at dusk and after dark with a very brilliant lamp, but did not see a single moth, though we hoped to get *T. opima*. The next day was devoted to larvæ, and by beating old lichen-covered apple trees got about two dozen of *Cleora lichenaria*, then nearly full-fed. From juniper numbers of *Thera simulata* and an odd *Eupithecia sobrinata*. Later in the month I determined to try for larvæ of *Plusia interrogationis*, and succeeded in taking a considerable number. Up to this the only imagines captured worth recording were *Lobophora viretata*, *Eupithecia coronata* (the first taken by me here), *Larentia salicata*, never before seen excepting in the autumn, and *Dianthæcia capsophila*. In June things began to mend, and the remainder of the season was fully up to the average. The novelties to me in this district were *Acronycta menyanthidis* and *A. euphorbiæ* v. *myricæ*, *Dianthæcia nana* (*conspersa*) at flowers of *Silene maritima*, and *Oxyptilus parvidactylus* at *Eupatorium cannabinum*. The most remarkable event in my experience was taking *Acherontia atropos* on the 14th of the month. In July (probably the best month), *Plusia bractea* and *P. interrogationis*, *Emmelesia tæniata* and *Chærocampa porcellus*, were taken here; the month was hot and dry; fair numbers of each of these occurred, and of course many others. *Eupithecia debiliata* was more abundant than usual, and seemed to be as partial to holly as *E. tæniata*, the two species several

times being beaten out at the same time from the same tree. A specimen of *Cidaria suffumata*, taken on July 3rd, was apparently just out. Is this species sometimes double-brooded? During this month I captured more than one of an interesting variety of *Lycena icarus (alexis)*; the upper side of hind wings has a distinct marginal row of black spots. With August appears the army of Agrotidæ; *Agrotis vestigialis (valligera)*, *A. cursoria*, *A. præcox*, *A. tritici* in their many varieties, swarmed on the sand-hills. The novelties were *Melanippe galiata*, *Botys asinalis*, and on the last of the month, at flowers of tobacco, *Sphinx convolvuli*. *Chærocampa celerio* I believe I saw; it is not impossible, as a specimen was captured in the neighbourhood a few years since. The white-flowered tobacco (I think it is *Nicotiana affinis*) appears to me to be well worth growing; the flowers should prove very attractive to the Sphingidæ. In September the weather became stormy; *Epunda lutulenta*, vars. *lunebergensis* and *sedi*, were the prizes during that month. They occurred in greater numbers than in previous years. On the 17th I captured fifteen, but unfortunately nearly all were damaged, and most of them I let go again. *Stilbia anomala*, only one (at light); *Noctua glareosa*, *Anchocelis lunosa*, *Luperina testacea*, in all shades of gray and brown, were numerous.

Ivy, during October and up to the end of November, was very attractive, my captures including *Miselia oxyacanthæ*, *Calocampa retusta* and *C. exoleta*, *Orthosia lota* and *O. macilenta*, *Cerastis vaccinii*, *Anchocelis pistacina*, *Xanthia circellaris (ferruginea)*, *Xylina socia (petrificata)*, *Cidaria siterata (psittacata)* and *C. miata*, and *Thera variata*.

Sugar, throughout the entire season, was an absolute failure; such species as *Noctua dahlii*, *Hadena contigua*, *H. thalassina*, *H. adusta*, *Triphæna fibrosa*, *Xylophasia sublustris*, abundant in 1884, were not seen; and even *Thyatira batis* and *X. monoglypha (polyodon)* refused to be tempted. Probably the dry summer, and the unusual number of Aphides causing every leaf to be sticky with honeydew, may explain these anomalies.

Culleammore, Sligo, January, 1886.

TORTRICES TAKEN NEAR CAMBRIDGE.

BY WILLIAM FARREN.

THE following is a list of the Tortrices which my son and I captured during 1885 around Cambridge and in Wicken Fen. I am afraid it is very scant, especially in specimens; but the reason is, I think, the same as referred to (Entom. 78) in the list of the *Tinea*,—the prevailing strong and cold east winds, which lasted nearly all summer.

Tortrix podana, flying at dusk in the fen, and beaten from mixed hedges: one quite a pigmy. *T. rosana*, abundant in hedges. *T. dumetana*, a fine series flying at sundown; looks like a *Tortrix* of half the size, and very light, owing to its pale under wings, which show plainly in the dim twilight; comes to light directly the lamps are lit; has a peculiar zigzag movement as it runs up the side of the net; solitary specimens were bred from buckthorn, the low creeping bramble of the fen, and yellow loosestrife; is confined strictly to Wicken Fen. *T. heparana* and *T. ribeana*, commonly bred and beaten out, both in the fen and elsewhere. *T. unifasciana*, common in privet hedges. *T. costana*, bred from various fen plants, and abundant at light; some very dark vars. *T. palleana*,* a few only, flying with *T. viridana*, which is also rare in the fen; at four o'clock in the morning, near a scrubby little oak, about three feet high, in the middle of the fen. *T. forsterana*, two only in the fen.

Peronea variegana, common in whitethorn hedges, in fine variety. *P. hastiana*; there are two great broods of this in June and October, but they keep coming in the intermediate months; some sallow bushes are specially infested with this species, nearly every leaf being attacked; I have this in great variety, which I must get some old friend to name for me. *P. shepherdana*, bred in plenty from meadow-sweet heads; seldom seen on the wing, but comes freely to light.

Rhacodia caudana, beaten from fallows, but not common.

Teras contaminana, beaten in plenty from whitethorn, and in great variety; some brightly coloured and strongly marked, others dull leaden grey, with scarcely any markings.

Dictyopteryx lorquiniana (*uliginosana*, of my young days, when it was extremely rare); now bred in abundance from the flower-heads of *Lythrum salicaria* in October, and from shoots of the same plant found in June, but is scarce then and hard to find; this summer brood has the black spot on the fore wings, and used to be called the female, but both sexes have the

* Probably the yellow variety of *viridana*, known as *suttneriana*, Schiff., and not *palleana*, Hb. (= *icterana*, Fröl.).—R. S.

spot then; and although I bred a very large series of the autumn brood, not one had the large black spot; they are either quite plain or sprinkled with fine black dots; a rare variety of this is streaked like some of the vars. of *Peronea hastiana*, and only occurs in the autumn brood; comes to light in July. *D. leflingiana*, beaten from oak at Fulbourn. *D. holmiana*, common in hedgerows among brier; also in the fen. *D. bergmanniana*, in plenty in the fen, and at Wicken. *D. forskaleana*, not common at Cambridge among maple.

Argyrotoxa comeyana, common amongst privet round Cambridge.

Ditula hartmanniana, rare in the fen. *D. semifasciana*, one only in the fen.

Penthina pruniana and *P. variegana*, bred and taken commonly from sloe and whitethorn. *P. ochroleucana*, used to be a plague to me in my rose-growing days, but I could not find one last year. *P. gentiana*, bred from teasle-heads, and specimens taken at "Flem Dyke" and Chippenham, where there is no teasle. What does it feed on there, or is it another, but closely-allied, species? *P. fuligana* (*carbonana*), bred a nice series from the old stems of *Stachys palustris* in the fen; very rarely seen on the wing. Note.—Do not kill this with ammonia if you want to retain the beautiful purple-black gloss; a good dose of tobacco-smoke will kill and retain the colour too.

Hedya ocellana, bred freely, and beaten from hawthorn. *H. aceriana*, a few from poplars. *H. dealbana*, one only in the fen. *H. servillana*, a solitary, but beautiful, specimen in the fen from sallow.

Spilonota trimaculana, abundant in hawthorn and rose. *S. roborana*, two or three only.

Pardia tripunctana, abundant from hawthorn.

Aspis udmanniana, a few from bramble in the fen.

Sericoris fuligana (*abscisana*), a series at light; not seen at any other time. *S. lacunana*, very abundant in the fen; three of the var. *herbana*. *S. alternana*, two only in the fen.

Euchromia purpurana, rare in the fen, flying at dusk, and at light directly we lit up.

Orthotania antiquana, a good series at light, came at all hours. *O. striana*, only saw one, and that at light. *O. ericetana*, one only.

Cnephasia musculana, rare among brambles

Sciaphila nubilana, common in hawthorn. *S. subjectana*, flying by day along hedgerows. *S. virgaureana*, common in the fen. *S. chrysanthæana*, one only in the fen. *S. hybridana*, abundant in hedgerows.

Sphaleroptera icterica, common on the "Breck Sands" and at "Flem Dyke"; the female rare.

Chlopsis rusticana, my son caught one in the fen in May; used to be common there.

Bactra lanceolana, abundant amongst rushes everywhere.

Phloxopteryx siculana, one in the fen. *P. biarcuana*, a few in the fen. *P. paludana*, a series in the fen, but was scarce last year; larvæ on *Lathyrus palustris* between united leaves, in September.

Grapholitha nigromaculana, not at all common on the fen banks, but I have seen it in swarms years ago. *G. subocellana*, two in the fen. *G. trimaculana*, in swarms in the elm hedges.

Hypermecia angustana, bred from sallows in plenty; also at light, but rarely.

Batodes angustiorana, one only from fir.

Pædisca oppressana, found sitting on aspen trunks; very local. *P. corticana*, not common in hedges. *P. semifuscana*, bred freely from sallows in good variety; two with broad white dorsal streaks.

Ephippiphora pflugiana, bred from the red larvæ in dead thistle-stems. *E. inopiana*, rare in the fen at light. *E. nigricostana*, rare in hedgerows. *E. populana*, bred from dwarf willow, and taken from willow bushes; sits on the leaves in the sun in the afternoon.

Semasia ianthinana, rare in hedgerows. *S. weberiana*, bred from apple-bark, and common on apple trees.

Retinia buoliana, bred from shoots of Scotch fir. *R. pinivorana*, beaten from Scotch firs.

Carpocapsa pomonella, bred from spun-up larvæ under apple-bark, and on trunks of apple.

Opadia funebrana, the larvæ were common last autumn in sloes, and various sorts of plums, especially damsons and crixes; it remains to be seen whether we breed any.

Endopisa nigricana, a few flying just before dark on the borders of the fen.

Stigmonota orobana: this flies when the sun is setting, and seems quite merry for a few minutes in the low sun's rays, but scarcely a series were taken, as it and the light are so soon gone; none came to our lamp-light; Wicken Fen. There is a larva in the dead pods of *Lathyrus palustris* which we suspect is this species, but have not yet bred it. *S. compositella*, common in clover fields. *S. regiana*, one or two beaten out of an old mixed hedge; but I am told this is common at Ely on sycamore.

Dicrorampha politana, I found this common on a patch of ground only a few yards square, and nowhere else. *D. petiverella*, common on chalk lands amongst yarrow. *D. saturnana* and *D. acuminatana*, rare on the fen banks.

Pyrodes rheediella, not rare, flying in the sunshine along whitethorn hedges.

Catoptria ulicetana: where we can find a furze bush we find this, but have not much of either here. *C. hypericana*, bred from *Hypericum* shoots,

and not uncommon on the chalk. *C. parvulana*, two at "Flem Dyke," of what Mr. W. Warren says should be this. *C. cana*, at "Flem Dyke," not common. *C. fulvana*, two or three in the fen. *C. scopoliana*, common at "Flem Dyke." *C. expallidana*, rare, in the fen; comes to light about 10 to 11 o'clock, and is easily missed, as it at once sits on the glass of the lamps, and looks so like a common *Crambus*. *C. citrana*, not very uncommon on the "Breck Sands."

Symathis oxyacanthella, in swarms everywhere along hedges.

Eupacilia angustana, "Flem Dyke." *E. mussehlana*, six specimens in the fen, which Mr. H. T. Stainton refers to this species; with this I can hardly agree; the ground colour is silvery, not yellow ochreous, as in *E. mussehlana*, and is mottled with rich brown markings; the fascia is not placed at such an angle; the basal patch is larger and darker, and it has a netted appearance, owing to the light ground and sharp clear dark markings; Mr. W. Machin thinks it is new. *E. udana*, half a series, flies at dusk in the fen; varies much in size. *E. notulana*, a good series, and a few over for friends: flies at dusk, and is very conspicuous on the wing. *E. rupicola*, one only in the fen. *E. roseana*, had some larvæ in teazle-heads, but did not breed them. *E. ciliella*, only one or two on the fen banks.

Xanthosetia zoegana, came to light in the fen, but rare; one brown var. and one almost white; all small in size. *X. hamana*, common in the fields round the fen, and at light in the fen; some nice vars.

Chrosis alcella (tesserana), common at "Flem" and "Devil's" Dykes.

Argyrolepis hartmanniana, a few amongst some tall rank grass. *A. subbaumanniana*, common on the "Breck Sands" and at "Flem Dyke." *A. schreberiana*, on the trunks of wych elms in the fen district; extremely local. *A. badiana*, at light, and nothing in the twilight in the fen. *A. cnicana*, one or two came to light.

Conchylis francillana, one only in "Flem Dyke." *C. dilucidana*, three in same place. *C. straminea*, came freely to light in the fen; also brushed up by day.

14, King's Parade, Cambridge, April, 1886.

REARING THE TUSSEK SILKWORM.

BY CLAUDE JEAN DUMAINE.

DURING my stay in the Hazareebagh District of India, having at my disposal about quarter of a square mile of jungle close to my house, I resolved to experiment personally in the art of rearing the Tusser worm (*Antheræa paphia*, Linn.).

In the latter end of May I purchased seed cocoons, and,

guided by a practical man, picked out the ones containing female moths, as those containing males are useless. The cocoons containing female moths are, as a rule, larger, and the two extremities are pretty equal and much rounder at the end than those of the males; then again the safety cord, by which they are attached to the branches, is much thicker, and generally proceed from one side of the cocoons. The cocoons containing males are always smaller, and one of the extremities is more pointed than the other; the safety cord is thin, and generally starts from almost the top of the cocoon. The next step is to satisfy oneself that the chrysalis is alive, which can easily be found out, not only by the weight, but by the sound. The dead ones, when shaken, give a sharp rattling noise, and are also very light. I tested over and over again the accuracy of these statements, and found them to be correct. I then got green branches, made bows of them, and threaded the string through the loop of the safety cord; six to eight cocoons were put on each bow, and hooks made of green branches tied to the bows, so as to be able to fix them where needed. This is the primitive, but effective, native system by which the cocoons can be kept safely and out of harm's way.

About the 20th of June, when the rains had well set in, as customary, I hung these bows in my verandah and examined the cocoons. Generally at about sunset the head of the cocoons are moistened by the liquid secretion from the mouth of the insect; this is the sign the moth will soon come out. After candle-light, from 7 to 8 p.m., the moths come out, and cling to the sides of their respective cocoons. It takes them about half an hour to settle and stretch their wings, when the males only fly away, and not being needed are allowed to do so. At 8 p.m. I had all these bows taken out and suspended to a string stretched in the open air across my compound, about six yards from my house, so that the females could, while clinging to the side of their cocoons, be visited by the wild males. The native way is to hang the bows under the trees, the advantage of which is that they are better protected from the attack of the night birds than when on the string; but on the other side run great risks of being destroyed by ants and rats, and often are found neglected by the males in consequence of their seclusion. To remedy the only defect there is in my method, I used to keep men on the watch; a great expense,

unless you have a large quantity of moths. To satisfy myself that it is a mistaken supposition, on the part of natives, that the escaped male moths never returned to the place, I had several distinctive marks made on the males that emerged from my cocoons in the evening before they had time to fly away, and found that they returned not only the next morning, but many following ones. At 3 to 4 a.m., as customary, I used to go and examine my female moths, and satisfy myself that each female had a male; and for those that had none, wild males were caught. It is a well-established fact that a female moth that has not been visited by the male the day she comes out from the cocoon, before dawn, will never be approached by one again; so that female is a loss to the person rearing it. I was no little astonished, when I visited my moths in the morning, to find a great number of spare male moths flying round and round the females; in fact they were troublesome; but the minute daylight is seen they all vanish.

At this period, as usual, I had all these bows taken into my house and suspended in a room, keeping them away from the wall, as protection against ants and rats. The females and males remained together the whole day till sunset, that is, about twenty-four hours from the time they emerged from the cocoons. The males then leave the females and fly away, which they are allowed to do. The females, if not immediately secured by clipping the wings, will fly away also.

The female moths are then put in places where the eggs are to be laid. The native methods are to put two or three in each *pouche*, made of *sabay* grass, measuring about eighteen inches in length by six inches in diameter, closed at both ends, the lower part rounded and the top pointed, the straws being about quarter of an inch apart. The advantages of these pouches are that the moths are well secured, and they save much trouble in looking after the eggs. When the time of hatching comes the pouches are simply attached to the trees where they are to be reared, and the "worms" do not run any risk of being drowned or eggs spoiled, if, as often takes place, a shower of rain should come before the eggs are hatched or the "worms" have all left it. On the other side the loss of eggs must be great, as they are often laid just between two straws, or washed off by the rain; but the natives do not seem to care much for such losses.

My method was to put the females into a box previously lined with paper, the top part being open. I treated them in three different manners. In the first box, measuring inwardly about $18 \times 15 \times 6$ inches, I put six females; I left these moths undisturbed till they died on the fifth day, after laying their eggs at pleasure. The result was that the eggs produced about one-third of good strong worms, then about half of the remainder gave most weak and sickly ones; and out of what was left many eggs never hatched, and a number of worms were hardly able to creep out of the eggs, and died. In the second box I doubled the number of females, which were still far from being crowded. I took up the eggs which were laid the first twenty-four hours, and every worm hatched; some, however, being sickly. This proved to me clearly that the sooner the eggs were laid the better; my guide had also told me so, and the following is the method I employed. It is well known that, when laying, the moths spin round and round, flapping their wings all the time, and when at a standstill they can be forced to renew the spinning round and round and laying, by simply touching them with the finger. The third box I purposely overcrowded with moths, calculating that amongst such a number there would at least be a few that would always be laying, and when doing so they would touch the adjoining moths, which would commence spinning afresh, and naturally cause the undisturbed ones to do the same, so that all the eggs would be laid within a short time, which is most desirable.

Next morning, that is twelve hours after, I removed these moths into another box, which we will call No. 4, and allowed them to remain unmolested for twelve hours more, keeping those eggs separately; and then again removed them to another one, which we will call No. 5. The eggs which were laid in box No. 3 gave good worms, and all hatched. In No. 4 box there were hardly any eggs, which gave indifferent kind of caterpillars. In box No. 5 there were but few eggs; many, as usual, did not hatch at all; others were not worth keeping. In experiment No. 3 the moths died in three days, while in Nos. 1 and 2 box they lived up to five days. Each female lays from 350 to 400 eggs.

Before going any further I shall describe how the field covered with trees, on which the worms feed, is prepared in the

usual manner:—1st, all useless trees and brushwood are cut down; 2nd, all the lower branches of the useful trees are also cut to about three feet from the ground, as well as those branches which touch adjoining trees; 3rd, the trunk of the trees must be well exposed; 4th, all dried leaves and grass are removed;—in fact the place is made as clean as any garden, so that the man in charge can at a glance see the worms are not molested. The only trees I tried to rear my worms on were *Shorea robusta* (sal, sakooa) and *Terminalia tomentosa* (assun); in fact these are the principal ones used for that purpose.

The eggs having been laid in boxes, I detached them with an ivory paper-slice, and kept them in boxes till the evening of the eighth day. I then had pouches made of green leaves, taking the precaution of making two or three small holes in the lower part, so as to allow the water to run out should a shower come on. The first time I did it I made no holes, and the natural result was that all my worms were drowned and eggs spoiled. This leaf-bag or pouch I attached to the trees, where the worms were to be reared, on the evening of the eighth day. On the morning of the ninth day the eggs hatched, and the trees were at once covered with small caterpillars, about three-sixteenths of an inch long, and one thirty-second part of an inch broad; they were rather hairy, and of a dark colour. The natives attach the pouches to the lower branches of the trees, so that the worms go upwards; and when they have eaten up all the leaves, they being on the top of the trees, the keeper has to climb up and hold fresh branches with leaves where the starving worms are, keeping it there till the worms are on them, and then hand it to another man, who ties it to adjoining trees. This operation is risky, troublesome, and expensive, and many hands are needed.

My method was the same, so far as removing the worm from one tree to another; but the day the eggs were hatched I attached the pouch to the tops of the trees, where young worms not only had the tender leaves to feed upon, but, when they had done eating the leaves, they had arrived at the lower branches within easy reach of the keeper, who without any risk removed them as above described, one man being able to do as much as ten by the native method. The worms feed two days and a half and rest or starve a day and a half, and before commencing to feed again they fix their skin to the branch and crawl out of it, which skin they

devour and then take to the leaves. This they continue for forty-five days, and at each operation the worms get not only larger but change colour, till bright spots of silver and gold glitter in the sun. The morning of the forty-sixth day the creature spins its cocoon, which takes it two and a half to three days. The cocoons containing females are kept for seed, the male ones are put in hot water to destroy the vitality of the chrysalis, and then kept for sale. They remain in their cocoons for fifteen days, when the whole process above detailed must be done over again; but when they spin a second and last time for the season, the cocoons are allowed to remain on the trees three to four days to get seasoned, as the harder they are the better, when they are collected and sold to merchants. From the day the moths come out of the cocoons for the first time, to the time they are collected off the trees for sale at the end of the second and last crop for that year, there is a lapse of 134 days. The revenue paid to the "zemindar" for the use of the trees varies from Rs. 3 to Rs. 4 per keeper, who can have two or three boys to help him.

The cocoons reared on the *Terminalia tomentosa* (assun) are the largest. Those from the *Shorea robusta* (sal) are smaller but harder, and said to contain more silk. Those found on the *Zizyphus jujuba* are still smaller and harder, and said to contain as much silk as any, but this I cannot vouch for, as I had no opportunity to satisfy myself on the subject.

Before ending I must state that it is a known fact that the silkworms have enemies ready to eat or destroy them from the time the moth comes out from the cocoon, and even when in it in its wild state. While the moth is still hanging to the cocoon from which it has just issued, the night birds, bats, flying foxes and rats attack them, as well as ants. When in the eggs ants make short work of them, and in fact at all times. When they turn into worms they are attacked day and night by birds of all kinds, carried away by rats, snakes, Spanish flies, and wasps and other insects sting them to death. There is a kind of insect which has a long proboscis which it fixes in the worm and literally sucks up all the inside. On one occasion, having nothing wherewith to catch it, I tried to kill it by pressing it between two leaves; I was stung in the top of the middle finger, and before I had time to drop it, I felt the pain right up to my shoulder.

This insect destroys worms by hundreds, as it often only takes a taste out of each worm it comes across. The snakes make short work of them, and if they happen to fall off the branches toads eat them also. Ants of all kinds, as I have already said, never let them escape when they have an opportunity. When they have spun their cocoons and are hanging to the branches in their wild state, there is a bird with a strong parrot-shaped beak which cuts the cocoons and eats the chrysalis. The number of eggs that are hatched must be very great, in order, after the inroads made by so many different kinds of enemies that swarm in the jungles, to still leave the millions of millions of cocoons which are sold for the silk trade.

I will now give a short account of the various beliefs or superstitions of the natives who rear the worms. They must make new cots or "charpoys" to sleep upon, their old ones being considered unclean. When once the eggs are hatched they must never leave the areas covered by the trees on which the worms are to be reared. They must not see their wives. No woman nor girl must enter the spot chosen by them in the jungles. They must bathe twice a day. Must never shave or cut their hair. Their meals must be taken to them by some boy or man, and must be placed just on the border of their cultivation, where they will eat and leave the plate to be taken away by whoever brought it. Cattle of all kinds must not trespass on the chosen spot. They must not wear shoes. They must not eat fish. These are some of the laws laid down by their ancestors, and they strongly believe that if they break through any of these rules their punishment will be the total loss of their crop. As a reward, they have been given the hope that they will, after many years, by acting as told and persevering in the trade, find that some of their cocoons have turned into lumps of gold. I have in vain tried to argue with them and open their eyes, by explaining that the person who made these rules knew full well the worms required their presence day and night, and to compel them to be always in attendance laid the above rules, which have the desired effect; and as for the hope of getting the golden cocoons, it was but a figurative way of telling them that continual attention to their work, and perseverance in spite of all losses they may have during the years of short rainfall, they will at the end get a small fortune. But all my arguments went for nothing.

List of trees (with botanical and local names) found in the Hazareebagh Jungles on which silkworms can be reared or are found in their wild state:—1, *Terminalia tomentosa* (assun); 2, *Shorea robusta* (sal); 3, *Terminalia belerica* (baheera); 4, *T. chebula* (harra); 5, *Buchanania latifolia* (piar); 6, *Ficus infectoria* (pakur); 7, *F. religiosa* (peepul); 8, *F. glomerata* (goolur); 9, *F. bengalensis* (bur); 10, *Bombax malabaricum* (seemul); 11, *Carrissa carandas* (karrunda); 12, *Bassia latifolia* (mowha); 13, *Anogeissus latifolia* (dhorn dhonta); 14, *Schleichera trijuga* (kussum); 15, *Zizyphus jujuba* (bair); 16, *Terminalia arjuna* (arjoon); 17, *T. catappa* (baddam); 18, *Symplocos racemosa* (lodh); 19, *Artocarpus integrifolia* (kantak); 20, *Anthocephalus cadamba* (kadam); 21, *Gmelina arborea* (gamar); 22, *Dillenia indica* (chalta); 23, *Lagerstromia parviflora* (séd or sedah).

I have no doubt that there are great many more on which the Tusser could be reared, as well as other wild silk-spinners, such as the *Attacus atlas* and other kinds of *Antheræa*. But in the Hazareebagh district and adjoining ones the only one reared is the Tusser, and the principal food is *Terminalia tomentosa* (assun), probably because it is more plentiful; as the tree gives but a second-class wood for building, the natives do not care to cut it, as they do the *Shorea robusta* (sal) on which the worms also feed.

The rule, so far as I can see, is, the less you have to take the worms from tree to tree the better, you must never touch the worms with the fingers, and the deeper is the jungle the larger and harder are the cocoons, so one must go into jungles far away from large towns to rear them profitably.

I resided for fifteen years at Burhee, in the Hazareebagh district, and made the silk culture in open air a pleasant pastime and study. I visited the adjoining districts of Singbhoom, Manbbhoom Lohardugga, Palamow, and spent six months at Soorjoogah, passing by Mirzapore, Singrowlee and Rewah districts; in all these places the Tusser cocoons abound, and I have not the slightest doubt that a very profitable business could be carried on by renting at a nominal cost the vast tracts of jungles, and engaging a suitable number of men to carry on a large rearing establishment. The great advantage one has is that in making use of the jungle, one has no expense in cultivating trees; the worms have also abundance of fresh leaves to feed

upon, which is not the case in rearing the ordinary *Bombyx*, for whom quantities of land must be planted with mulberry trees, and kept up at an enormous cost and risk, as well as other well-known drawbacks.

Very large quantities, say the entire crops of several districts, could be secured by making arrangements with the breeders. It is a known fact that every year "jungles" are compelled to abandon the trade simply from want of money, having to wait five months to realize the value of their crops. I shall be glad to give any further information on the subject of rearing the worms.

Chandernagore, March 8, 1885.

NOTES ON LEPIDOPTERA IN DORSETSHIRE.

BY E. R. BANKES.

AMONG many rare and local species of Lepidoptera, which have been captured during the last four or five years by the Rev. C. R. Digby and myself on the South Dorset coast (which, it must be remembered, includes the so-called Isle of Portland), the following are the most noticeable:—

Sphinx convolvuli, *Sesia ichneumoniformis*, swept from flowers of *Lotus corniculatus*; *Nudaria senex*, *Lithosia sororcula* (*aureola*), *L. griseola* var. *flava* (*stramineola*), excessively local, though common where it occurs; *Gnophria quadra*, *Emydia cribrum*, flying on the heath towards dusk; *Dasychira fascelina*, *Bombyx trifolii*, bred from larvæ on grass; *Notodonta dictæoides* (one larva on a birch tree), *Bryophila muralis* (*glandifera*), *Leucania littoralis*, of which the larvæ can only be obtained at night, as they lie buried deeply beneath the sand by day; *L. impudens* (*pudorina*), *Cænobia rufa* (*despecta*), *Heliophobus hispidus*, *Grammesia trigrammica* (*trilinea*) var. *bilinea*, *Agrotis lunigera*, *A. ripæ*, *A. præcox*, *A. simulans* (*pyrophila*), *Triphæna orbona* (*subsequa*), *Dasyampa rubiginea*, at ivy bloom; *Epunda lichenia*, *Aporophila nigra*, at sugar; *Cucullia asteris* (the larvæ on China asters), *C. absinthii*, *Heliothis peltigera*, bred from a larva on *Ononis arvensis*; *Hydrelia uncula* (*unca*), *Thalpochares ostrina* (Entom. xiii. 282), *Arentia flexula*, chiefly at light; *Hypenodes costastrigalis*, *Tholomiges turfosalis*, *Eurymene dolobraria*, *Boarmia repandata* var. *conversaria*, *Geometra vernaria*, *Zonosoma orbicularia*, among willows; *Acidalia rusticata* (a few taken annually amongst

Parietaria officinalis (Has it ever been known to feed on this plant?), *A. straminata*, *A. emutaria*, *A. degeneraria*, *Macaria alternata*, at light; *M. notata*, *Selidosema ericetaria* (*phumaria*), *Larentia olivata*, *Eupithecia constrictata*, beaten from thorn and bramble brakes, growing where wild thyme is plentiful; *E. coronata*, *Lobophora sexualis* (*secalata*), *L. viretata*, *L. carpinata* (*lobulata*), *Camptogramma fluviala* (one specimen at light), and *Phibalapteryx vittata* (*lignata*).

The Pyralides have turned up in good force, and are well represented by such local things as—*Scoparia lineolea*, on ash trunks and lichen-covered stone walls; *S. mercurella* var. *portlandica* (wrongly called *phaoleuca* in our lists), *S. resinca*, on lichen, on ash, and apple trees; *S. pallida*, *Odontia dentalis*, *Endotricha flammealis*, abundant, but very local; *Botys flavalis*, *B. asinalis*, amongst madder; *Ebulca verbascalis*, *E. stachydalis*, amongst *Stachys sylvatica*, on which the larva is common, though decidedly local; *Diasemia literata* (*literalis*), and *Stenia punctalis* (the larvæ live under stones in spring, and feed on grass-stems, dead leaves, &c.).

The Pterophori met with in the district show a good proportion of the British species, and include—*Amblyptilia cosmodyctyla* (*punctidactylus*), reared from larvæ feeding on flowers and unripe seeds of *Stachys sylvatica*; *Oxyptilus teucarii*, amongst *Teucrium scorodonia*; *O. parvidactylus*, *Mimaseoptilus phæodactylus*, *M. zophodactylus* (larvæ in seed-heads of *Erythraea centaurium*), *Leioptilus microdactylus*, *Aciptilia baliodactyla*, and *A. tetradactyla*. It is perhaps worth mentioning that in the end of June, 1884, I bred an imago of this last species from a larva found shortly before on wild thyme.

Among the Crambi we have been favoured with a fair share of "good things," our chief captures being—*Crambus sylvellus* (*adipellus*), *C. uliginosellus*, *C. latistrius*, *C. warringtonellus* (very local), *C. selasellus*, *Anerastia lotella*, *Ilithyia semirubella* (*carnella*), *Homæosoma sinuella* (larvæ in root-stocks of *Plantago lanceolata*), *H. binærella*, *Euzophera cinerosella* (larvæ in stems of *Artemisia absinthium*), *Cryptoblabes bistrigella*, *Phycis fusca* (*carbonariella*), flying in the evening amongst burnt furze; *Dioryctria abietella*, taken far away from any fir trees; *Nephoptyx genistella*, bred from larvæ and pupæ in thick webs in gorse bushes, but its range is unfortunately very restricted, owing to the constant cutting and burning of the gorse; *Rhodophaa marmorea*, among sloe bushes; *R. suarella*, together with *Oncocera ahenella*.

Of the Tortrices the most aristocratic species which have fallen victims to our efforts are—*Ecnecra pilleriana* (the ordinary brown form); we have met with a very handsome local variety outside the county, of which the fore wings of the male are glossy reddish ochreous, with ferruginous markings, while those of the female are unicolorous glossy dark ferruginous;

the larva on *Statice limonium*), *Peronea caledoniana*, amongst *Myrica gale*; *Penthina sellana*, on the downs; *P. marginana*, flying over marshes at dusk; *Sericoris littoralis* (*littorana*), amongst *Statice armeria*, on which the larva is found in April; *Euchromia purpurana*, *Orthotania antiquana*, *O. ericetana*, *Phtheochroa rugosana*, *Phoxopteryx diminutana*, among salallows; *Phlæodes immundana*, *Ephippiphora nigricostana*, *E. populana*, *Coccyx vacciniana*, *Stigmonota leplastrierana*, amongst wild cabbage, from which plant it has also been bred; *Catoptria expallidana*, *C. pupillana*, amongst wormwood; *Eupæcilia atricapitana*, *E. hybridella*, *E. ambiguella*, of which the curious cocoons are found attached to stems of *Rhamnus frangula*; *E. udana*, at light; *E. rupicola*, *Xanthosetia zoegana* var. *ferrugana*, *Argyrolepis subbaumanniana*, *A. zephyrana*, *A. enicana*, and *Conchylis straminea*.

In that interesting group, the Tineæ, many noticeable species have occurred, amongst them being *Psyche villosella* (the cases are usually common on the heaths, though they nearly all produce females), *Psychoides verhuellella*, bred from seed-fronds of *Asplenium ruta-muraria*; *Xysmatodoma argentimaculella*, of which the larvæ occur in silken tubes on lichens on turf banks, as well as in their usual situation on rocks; *Tinea albipunctella*, *T. nigripunctella*, *T. semifulvella*, *Harpitperyx scabrella*, *Depressaria rotundella* (larvæ on *Daucus carota*), *D. badiella* (larvæ on the radical leaves of *Hypochæris radicata*), *Brachmia mouffetella*, *Bryotropha mundella*, *Lita costella*, of which three broods have been observed; *L. obsoletella*, *L. ocellatella* (larvæ on *Beta maritima* and on *Atriplex portulacoides*), *L. plantaginella*, bred from *Plantago coronopus*; *L. atriplicella*, *Recurvaria nanella*, *Apodia bifractella*, *Ptocheuusa inopella* (excessively local), *P. subocellea*, *Doryphora oblitella*, crawling up grass-stems in a swampy field at sunset; *Cladodes geronella*, *Hypsilophus schmidiellus* (*durhamellus*), *Æcophora lambdella*, beaten from dead furze, and also from dead bramble far away from any furze; *Æcogenia quadripunctata* (*kindermanniella*), amongst *Parietaria muralis*, in the dead stems of which plant the larvæ have been found feeding in April; *Butalis variella* (the larvæ are found in spring below the sand in long silken galleries attached to half-buried stems of *Erica cinerea*, upon which they feed), *Amphisbatis incongruella*, flying on the heaths; *Zelleria hepariella*, *Gracilaria semifascia*, *G. phasianipennella* (the cones on *Rumex acetosella*), *Coriscium cuculipennellum*, bred from cones on privet; *C. citrinella*; *Coleophora melilotella* (larvæ and imagines common amongst *Melilotus*), *C. ahenella* (the cases on stems of *Rhamnus frangula*), *C. potentillæ*, *C. ochrea*, *C. obtusella* (cases on seed-heads of *Juncus maritimus*), *C. juncicolella*, *C. flavaginella*, Lienig; *C. salinella*, bred from larvæ feeding in October on *Atriplex portulacoides*; *C. conyzæ*, *Chauliodus insecurellus* (bred last summer from larvæ on *Thesium humifusum*, on which plant Mr. W. H. B. Fletcher had discovered the

larva in the spring; two broods have been observed, in May and in July, and I expect there is probably a third in September: but, as far as my own experience goes, the species is terribly subject to the attacks of ichneumon, *C. daucellus*, of which there are three broods, as, from larvæ found at large on *Daucus carota*, I have bred imagines in May, July, and September: *Elachista perplexella*, bred from *Aira caespitosa*; *E. subalbidella* (*subochreella*), *Cemistoma lotella*, bred plentifully from *Lotus major*, growing in bogs: *Opostega salaciella*, and—last as well as least—*Nepticula cryptella*, amongst *Lotus corniculatus*.

Of the above-mentioned species a certain number are new to the Dorset list; while *Coleophora flavaginella*, Lienig, of which the larvæ were found on *Sueda maritima* in October, 1884, by the Rev. C. R. Digby, with whom I was collecting at the time, had not previously been met with in Britain. He informs me that Mr. W. H. B. Fletcher found larvæ of this species on the south coast in the same year, but failed to rear them; though last year he took both larvæ and imagines.

The larvæ which I procured on that occasion hybernated when full-fed, and I succeeded in breeding the imago for the first time in June and July, 1885. It is necessary to add that there has been considerable difficulty in identifying this insect. It is certainly not *C. flavaginella*, Mühlig (*vide* E. M. M., xxii., pp. 135–137); and though it must stand for the present as *C. flavaginella*, Lienig, it seems not improbable that it is really distinct from Madame Lienig's species, and may prove new to science.

It may be of interest to mention, by the way, that in the spring of last year I was fortunate in taking a few *Eupithecia irriguata* in the northern part of the county, and have now pupæ resulting from a batch of ova laid by a female.

The above random notes on some of the most interesting species met with by two entomologists within the limits of this county alone, during the bad seasons lately experienced, will show that, in spite of its small size, Dorsetshire can boast of a lepidopterous fauna which would do credit to many a county of larger area.

The Rectory, Corfe Castle, March 31, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LYCENA ARGIOLOUS.—I am as much surprised as Mr. Harwood (Entom. 88) to learn that Mr. Harcourt Bath and Mr. J. Jenner Weir are under the impression that *Lycæna argiolus* is not double-brooded in the New Forest. The following records of my capture of specimens of the second brood of this species, in the New Forest, are extracted from my diaries for the years 1866, 1868, 1869, 1870, and 1874:—"1866, July 18th, one female. 1868, July 2nd, one male; July 17th, one female; July 22nd, one male; July 23rd, one male. 1869, July 15th, one male. 1870, July 12th, one female. 1874, August 3rd, two females." The capture of only nine specimens in five years certainly tends to confirm Mr. Harwood's opinion, that the second brood of this species is partial. I have also taken specimens of the second brood in Kent, Sussex, and Monmouthshire; but always sparingly. My experience of the first brood of *L. argiolus* is confined to May, 1882, during the first half of which month I found both sexes, in profusion, in the neighbourhood of Niton, and elsewhere in the Undercliff, Isle of Wight.—H. Goss; Surbiton Hill, Surrey, April, 1886.

LYCENA ARGIOLOUS IN THE NEW FOREST.—I find from my diary that in the year 1858 I took *Lycæna argiolus* in the New Forest in August as well as in May. I found but few of the latter brood, which might be accounted for by heavy rains, which lasted until the 18th of August. In the autumns of 1859, 1861, 1862, I also captured second broods. In the latter year, which was the last time I visited the Forest, there was plenty of ivy. I captured on October 23rd, 1858, at ivy-bloom, four *Dasycampa rubiginea*, two *Xylina socia* (*petrificata*), *Agrotis saucia*, *Epunda nigra*, *Hoporina croceago*, &c., in the New Forest.—WILLIAM FARREN; 14, King's Parade, Cambridge, April, 1886.

LYCENA ARGIOLOUS.—Much has lately appeared in the 'Entomologist concerning this, the most delicate and elegant, if not the most brilliant, butterfly of the genus *Lycæna* found in England, and much, doubtless, remains unrecorded which would throw additional light on its habits, both in the larval and imago states. My experience of this interesting little blue in the neighbourhood of Colchester, from 1872 to 1882, is to a great

extent corroborative, *viz.*, that it is undoubtedly double-brooded, as observed by Mr. Harwood (Entom. 88); but I do not remember having seen a single specimen there since the latter year. I have taken it flitting along holly hedges in May and August, and netted many fine specimens of the May brood hovering over or settling upon the flowers of old holly trees on Donyland Heath and adjoining wood near Colchester. I have also taken examples of this butterfly flitting along hawthorn hedges, and occasionally settled on gooseberry bushes (*Ribes grossularia*) in my garden, apparently only tending to prove that in those localities where the insect is periodically plentiful, it occasionally wanders from its staple food to sip the sweets of the blossom of other berry-bearing shrubs and trees. I notice that Stainton and other authors mention the flowers of the buckthorn, as well as those of the holly and ivy, as food of the larva of *Lycæna argiolus*.—GEORGE J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W., 14th April, 1886.

LYCÆNA ARGIOLUS IN NORTH KENT.—It is within my observation that about this district *Lycæna argiolus* has been much scarcer for some years past. Brother collectors I have worked with in bygone years always accounted this species double-brooded. There were certainly two distinct flights; but the first was, or appeared to be, far inferior in numbers to the second. We imagined the reason was because the winter was passed in pupation, and many died some years owing to the damp affecting them. The tendency the May brood showed to haunt the buckthorn hedges was certainly a fair indication that they deposited eggs on the flowers of *Rhamnus*; and the August insects appeared as partial to bramble, or later to the ivy bloom.—J. R. S. CLIFFORD; Gravesend, March, 1886.

RESTING HABIT OF VANESSA ATALANTA.—I should like to say a few words with regard to the resting habit of *Vanessa atalanta* (Entom. 60). I think the whole family of Vanessidæ have a habit of resting in some very odd places at times which have no apparent attraction at all. I have often noticed *V. atalanta*, flying along the sunny side of old cinder walls, frequently resting itself on the bare cinders, or on the crumbling mortar which had been loosened by long exposure to weather. I watched one specimen on one occasion for half an hour or so: it traversed the wall backwards and forwards a good number of times, resting

every few yards, opening and closing its wings with as much enjoyment as if it had been at rest on some expanded flower. Like its relatives, *Vanessa urticæ* and *V. cardui*, it is very fond of resting in the middle of roads, or on bare and barren patches of land, or on rubbish heaps, and bare stones along the roadsides. It is also very fond of flying along the sides of stinking ditches and brooks; and in these parts this is a sure locality, if nettles grow there, to find, at the right season, the larvæ. Now in this Black Country of ours I have seen *V. urticæ*, *V. cardui*, and *V. atalanta* flying and disporting themselves among the old cinder mounds, which are so numerous, where scarcely a vestige of herbage or a flower is to be found. They may be seen frequently resting on the bare stones that lie scattered around, and where there is no attraction that one could perceive, the place being so barren as to make one wonder why butterflies should be found there at all.—T. HILL; 15, Russell Street, Willenhall, March 6, 1886.

CÆNONYMPHA TYPHON IN NORTH WALES.—Does *Cænonympha typhon* (*davus*) occur in North Wales? In Morris's 'Butterflies' a locality is given between Bala and Festiniog. I was in that neighbourhood upon several occasions at the end of last June, but failed to find *typhon*. The place is, however, so precisely similar to those where I have taken this butterfly freely in Scotland that I think it must occur. Perhaps some of your readers will be able to confirm Morris's locality. Welsh specimens of this insect would, I imagine, be the variety *rothliebi*.—W. J. KERR; Tan-y-Bwlch, North Wales, April 5, 1886.

DIMINUTIVE DIURNI.—Referring to the small *Lycæna icarus* (Entom. 63), I have a specimen of *L. corydon*, male, which only measures an inch, and one *L. minima* (*alsus*) of $8\frac{1}{2}$ lines.—DOVER EDGELL; Firle, Lewes, March 1, 1886.

LARVA OF CHÆROCAMPA CELERIO IN SUSSEX.—The larva of *Chærocampa celerio* has occurred in this neighbourhood. It puzzled me until I obtained Westwood and Humphrey's admirable book, when I at once recognised it. In size it equalled a full-fed *Sphinx ligustri*, and the cat-like appearance of the head when at rest was very formidable. It ate small willow-herb, fuchsia, and white bedstraw. I obtained it on the 23rd September, 1885; it spun up on 4th October, but did not moult until 4th November. I regret to say that from, I fear, the closeness of the atmosphere, in the place where they were confined, both it and eight larvæ of

S. ligustri have since died. The larva in question died six days after moulting (I could see all its motions, as it spun up against the glass in an ordinary breeding-cage), and exuded a brown fluid from the head. I fear it perished from over attention, as the *S. ligustri* in a more open space did very well. Has anyone noticed the lateness of some larvæ last year? I found *S. ligustri* on October 5th and another on October 27th on privet hedges.—DOVER EDGELL; Firle, Lewes.

ACHERONTIA ATROPOS.—On the 2nd day of September last year I had a larva of *A. atropos* brought me. I placed it in a breeding-case with about two inches depth of earth. It burrowed in about four days. After about a week I put the case near a stove on some pipes heated with hot water, keeping the earth moist. It remained there until the 29th day of November, on which day a small but perfect specimen emerged.—A. DRUITT; Christchurch, Hants. [The pupæ of *A. atropos* are seldom lost if forced forward in the autumn by gentle and moist heat, and usually produce average-sized moths.—ED.]

HABITS OF ACHERONTIA ATROPOS.—In reply to Mr. Jefferys' question as to the rearing of *A. atropos* (Entom. 64), I may say that last autumn, as well as previously, I have had some experience with the larvæ. In a state of nature, I believe the moths always emerge in the autumn, but when the pupa is kept under artificial conditions the moth often appears in early spring. From observations among my friends, I find that only about one moth in ten emerges, and they all complain of the difficulty of rearing them. Under natural circumstances the caterpillar spins a cocoon in the soil, which protects the pupa from irritation and dryness. I find the best way is to allow the caterpillar to burrow naturally in the garden or some convenient place, and then to put a vessel or netting over it. The great desideratum is to keep the atmosphere moist. I have sometimes found putting the pupa in bran or fine sawdust answer well, but the best method of all is that applied in the garden.—HERBERT E. NORRIS; St. Ives, Hunts, March 19, 1886.

FORCING PUPÆ OF ACHERONTIA ATROPOS.—For many years I have occasionally tried to rear *A. atropos* from larva or pupa, and have always failed until this year. The larvæ were unusually common in this neighbourhood last autumn, one friend telling

me that he had secured between twenty and thirty in one potato field. I had myself eight pupæ chiefly found by potato-diggers. From several friends I had directions for forcing these, and I resolved to try the following method. I half filled a 12-inch pot with sand, on which I placed a layer of moss, and on this the pupæ, covering these with another layer, sprinkling it with tepid water. I placed over all a bell glass, and put the pot into a soup plate, which I kept constantly filled up with water, and placed the whole at a short distance from a sitting-room fire, so as to be *warm*, not hot, occasionally turning the heated side away from the fire. I began the treatment the last week in October; on December 19th a moth emerged at night. I did not discover it until next morning, when I found it "crippled," not having power to cling to the sticks I had provided, and properly expand its wings. I then put into the pot, under the bell glass, an expanding trellis-work of wood, such as is sold to ornament pots of plants for the table. This I subsequently found to answer admirably. On January 7th another imago emerged, whose wings did not expand at all. February 1st, a good and perfect specimen appeared. March 14th, one died when about to change, and another emerged but did not get free from a part of the pupa case, which spoiled one wing. March 21st, the last came out good and perfect. I should add that the fire went out, as usual, at night, and the pot, of course, became cold; could I have kept the pupæ in a continuous heat, as in a hot-house, doubtless I should not have had to persevere in the treatment so long. Of the eight pupæ, then, two only produced perfect moths fit for a cabinet, two more would have been so but for preventable accident, one died just before emergence, and the remaining three were doubtless injured before they came into my possession, and died soon after. I may add that all, with one exception, turned on their backs before emerging, and all came out at nearly the same time—between nine and ten at night. There may be nothing new in the above notes; but yet there are some among your readers who may be glad of such a practical narrative. Your correspondent, Mr. Jefferys (Entom. 64), may gather from it some hints as to the rearing of one of our grandest nocturnal moths.—H. W. LIVETT; Wells, Somerset, March 22nd, 1886.

VARIETY OF *SMERINTHUS POPULI*.—It may interest the readers of the 'Entomologist' to know that I have a most curious variety

of *Smerinthus populi* just emerged from pupa. In shape and form it is the same as those usually seen, but the whole of the insect—wings, legs, thorax, and abdomen—is of a colour between brick-red and chocolate, suffused with a whitish bloom as on ripe fruit. There is the usual whitish spot on the fore wings, and also the crimson flush on the hindermost wings; with these exceptions there are no markings whatever. The nervures of the wings are bold and distinct, and the antennæ are white. The insect is a female, and the pupa came from Scarborough. Other pupæ from the same source have produced the usual type.—W. FINCH, jun.; 158, Arkwright Street, Nottingham, April 8th, 1886.

DEIOPEIA PULCHELLA IN SUFFOLK.—It may interest some of your readers to hear that whilst walking on a piece of rough land close to the edge of the cliff at Bawdsey, near Felixtowe, Suffolk, I disturbed a specimen of this extremely rare insect. As its flight was by no means rapid, I had little difficulty in securing it by the aid of my capital covering. This auspicious event occurred on May 25th, 1885. The specimen, which is in very fine condition, now reposes in a cabinet at Brentwood, and was exhibited last week at a meeting of the Saint Thomas's Society Field Club held in that town.—TERTIUS R. SANDERS; Bawdsey, Woodbridge, April 5, 1886.

LATE AUTUMN EMERGENCE OF ORGYIA ANTIQUA.—It is very probable that some of the late-feeding larvæ of the above do emerge in October or November (Entom. 40), whether the weather be mild or not, or else they die off, for this species never appears to hybernate as a pupa. The late Edward Newman pointed out the successional character of the emergence during spring and summer; so that while some moths are on the wing, caterpillars descended from early specimens are spinning up. In the hot summer of 1868, a number of examples I had of the kindred species, *O. gonostigma*, attained their maturity quickly, came out as moths in July, and their eggs hatching gave me an August brood of larvæ, and moths again in October. These also deposited eggs, but they proved abortive. Were it not for the capricious character of the English climate, doubtless both the species would be habitually double-brooded. They are so in many continental districts.—J. R. S. CLIFFORD; Gravesend, March 1, 1886.

VARIETY OF *TRIPILENA PRONUBA*.—On the 1st of July, 1885, I bred a curious variety of *Triphaena pronuba*, from a pupa belonging to my friend G. A. Harker, of Crosby. The anterior wings are of the ordinary dull reddish brown colour, but the left posterior wing, instead of being like the right one, which is of the usual bright yellow tint, is a silvery buff colour, with the band apparently dusted over with buff scales, which give it a very peculiar appearance. The body is lighter than the normal type.—F. N. PIERCE, 143, Smithdown Lane, Liverpool.

FOOD OF THE LARVA OF *POLIA FLAVICINCTA*.—Mr. H. Miller must not infer from having several times found the larvæ of *Polia flavicincta* feeding on flowers (Entom. 91) that such is always the habit of the species. The larva is not at all particular whether it feeds on flowers or leaves, nor very much on what plant. It is very abundant in this district, feeding at large, usually on dock and plantain; but in gardens, where it is equally plentiful, its food is most varied, for low plants in great variety seem equally to its taste, as are also frequently the leaves of the lower branches of some garden shrubs. Only last autumn I bred a beautiful series of dark specimens from larvæ found in my garden during the summer feeding on ivy leaves.—GEO. T. PORRITT; Huddersfield, April 6, 1866.

HELIOTHIS PELTIGERA AT MAIDENHEAD.—The various species of *Heliothis* are known to have a partiality for light, and I should not have been surprised at taking *H. peltigera* in this way, but that I believe it is a coast species, or, at any rate, does not occur very far inland. September 9th, 1885, was an exceptionally warm night, and, besides such other species as *Drepana binaria* (*hamula*), *Catocala nupta*, and *Eugonia alniaria* (*tiliaria*), I took a fine specimen of *Heliothis peltigera* at rest on the ironwork of a lamp-post in the Cockham Road, Maidenhead.—(Rev.) GILBERT H. RAYNOR; Shenfield, Brentwood, March 20, 1886.

CUCULLIA ARTEMISIE, *Hufn.*—In the last volume (Entom. xviii. 290) *Cucullia artemisie* is recorded as an addition to the British fauna. After certain investigations which I have since made, I am of opinion that before this species is admitted as British it will be desirable to have further and independent records of its capture in these Islands.—JOHN T. CARRINGTON; Savage Club, Savoy, W.C., April, 1886.

VARIATION IN THE GENUS *Scoparia*. — Whilst collecting in the neighbourhood of Deal, in the early part of July, on a beautiful day, when Micro-Lepidoptera were swarming and it was difficult for a comparative beginner at the study of the micros to determine what to take, I found a *Scoparia* flying rather freely, late in the afternoon. From their white appearance and the time of the season I at once concluded they were *S. ingrattella*, especially as I had taken *S. dubitalis* some three weeks before in the neighbourhood of Rochester, and knew that by that time the species must be over, or very worn, while the bulk of these were in fine condition. As I had been hard at work some hours I had but few boxes left, and consequently took home but few specimens. I noticed, however, flying among the others, two or three specimens apparently bleached, and thinking they were very wasted I did not take them. However, noticing one at rest, and remarking that it looked comparatively fresh, I boxed it, and on arriving home and looking over my captures was surprised to find a remarkably pure white *Scoparia*, whose species would, at least, have been exceedingly doubtful; however, taking the surroundings of the insect into account, I think it is more than probable that the insect is a white form of *S. ingrattella*, Showing the specimens to my friend Mr. Coverdale, some time after, and telling him where it was captured, he told me that he had one, taken the previous summer at the same place; but that, I believe, was the only one he saw. His, however, shows the markings, although very indistinctly, and seems a sort of connecting-link between mine and the type. From its general appearance I should say *Scoparia ingrattella* was only a form of *S. dubitalis*, but its constant appearance about three weeks later would make this questionable, unless the nearness of the sea to the coast districts where *S. ingrattella* occurs makes a difference in the time of its appearance. If this were to make a difference, I should think it should be in the opposite direction, and the coast specimens would occur, if anything, earlier. It is worthy of remark, I think, that some of the *Scopariæ* have a tendency to vary towards the two extremes, "white" and "black." *S. cembræ*, *S. ingrattella*, and *S. pallida* seem especially to lean towards pale forms; while *S. mercurella* is specially inclined toward black, although its var. *portlandica* is much paler than the type. I have some very dark specimens also

of what I at present believe to be *S. ambigualis*, whilst I have others of this species very pale in colour. Some *S. angustea* vary much in depth of colouring, as also does *S. murana*, the colours of the vars. being darker than the type.—J. TUTT; Rayleigh Villa, Westcombe Park, S.E., January, 1886.

DESCRIPTION OF THE LARVA OF CRAMBUS CONTAMINELLUS.—

Last year I reared a few beautiful specimens of this insect; and, as so much interest pertains to the species just now, it may be advisable to place on record a description of the larvæ, which were found by Mr. W. H. B. Fletcher, of Worthing, feeding on either *Poa maritima* or *P. borrieri*, and from whom I received them on June 29th:—Length generally about three-quarters of an inch (though one or two specimens reached nearly an inch), and of the usual *Crambus* shape. Body cylindrical, tapering a little at the anal extremity; head narrower than the 2nd segment, has the lobes rounded, and is, along with the frontal and small anal plate, polished; tubercles large, the front pair on each segment rounded, the back pair linear; the skin has a semi-transparent glossy appearance. The ground is of a pale dingy greyish stone-colour, some specimens tinged with greenish; frontal and anal plates of the same colour, but at each side of the former, and again immediately below it, is an intensely black spot; head pale brown, freckled with darker brown; the mandibles very dark sienna-brown, almost black, indeed; a darker pulsating vessel, varying in colour in different specimens from grey to greenish, forms the dorsal stripe, but there are no subdorsal or spiracular stripes; tubercles of a darker shade of the ground colour, and in each is a small black spot, from which springs a short black hair. Ventral surface of the colour of the ground of the dorsal area; the anterior legs ringed, and the ventral legs margined, with dark brown. Lives in a gallery of silk, constructed in an upright position on the stem of the food-grass, but close to the root, in the same manner as does the larva of *C. perlellus*. The cocoon is about five-eighths of an inch long, a quarter of an inch wide, and is firmly constructed. The first moth appeared on July 28th, the others at intervals until August 23rd. All were of the Lancashire type, and were decidedly larger and broader winged than the only specimen of the Deal insect I have, and which I presume Mr. Tutt sent me as a representative specimen of his *cantiellus*. The five other specimens in my series, I find

from my register, were taken by Mr. Sydney Webb, in the Isle of Sheppey, in July, 1878, and from whom I received them the following month. They also are of the same type as those I bred, and not of the Deal and Blackheath form.—GEO. T. PORRITT; Huddersfield, April 5, 1886.

NOMENCLATURE OF *CRAMBUS CONTAMINELLUS*, *Hüb.* — At the risk of tiring your readers on the subject of *Crambus contaminellus*, I should like to offer a few more remarks about it, especially as the name I have suggested for the new species has been questioned on the law of priority. Of course the priority turns on Hübner's figure, which, as I have remarked (*Entom.* 74), is so bad that it would do for almost anything of the *contaminellus*, *inquinatellus*, *geniculeus*, or *cantiellus* type, if we supposed the greater part of the markings of either worn off, and it is not reasonable to suppose that Hübner figured a worn specimen. But as it stands it bears no resemblance to either the first or the last of the species above named; both insects have two well-defined angulated lines crossing the wings, those of *C. cantiellus* continuous throughout, and those of *C. contaminellus* made of short streaks; and in their typical form I do not believe it possible that Hübner meant it for either. I have in my series some seven or eight dozens of the Deal insect, and out of all this number there is not, and neither have I seen, a single specimen with a dot on the central nervure instead of the first line, which crosses the centre of the wing. It cannot possibly be this species. At any rate his figure does not represent a single specimen in the whole of my series, which, I believe, is as fine and variable as it is possible to get. As I remarked, too, in my last note on the subject, there is a form of the true *C. contaminellus* with the central shade obsolete, and the series of dashes which crosses the centre of the wing reduced to a minimum, the strongest marked, and, in fact, the only clearly-marked streak being found as a linear dot on the central nervure; and I pointed out then that I believed Zeller took this view. Curiously Mr. Tugwell points out that Mr. Stainton had one of Zeller's of this form, "not so strongly marked, but more nearly approached the Preston form, although it wanted the characteristic dark shade between the nervures." This is exactly what I pointed out with this form of Zeller's: "without the dark shade," and "not so strongly marked," gives us an insect which Hübner probably had before him, and

this at once throws us back on to the old form. I think it shows, too, how little Hübner knew about this species when we consider that the nomenclature of *C. contaminellus* as given by Mr. South in his List is *Crambus contaminellus*, Hb.; *C. inquinatella*, Hb.; *C. immistella*, Hb. If he knew so little of the insect as to give it three names himself, no wonder we are in a muddle. The second synonym also points to the probability of the suggestion that the form of *C. inquinatellus* with the dot in the centre of the wing and the broken line, was the subject of his figure. It seems very strange to me that such authorities as Herrich-Schäffer, Heinemann, and Zeller, could have been so far out when they wrote their descriptions. They all, undoubtedly, had Hübner's figure, and yet the former writes distinctly, "with a dark shade stretching to the first cross line." Herrich-Schäffer's figure is excellent, and, as I have before pointed out, Zeller undoubtedly considered the Sussex form the type, and the Deal species *vars.* How could these entomologists all be so distinctly mistaken? They knew both species, undoubtedly, and yet none described our Deal insect. I shall do my utmost to breed the insect next season. I think there will be no difficulty about getting ova. With such a series of the two forms as I have to compare with, I consider it absolutely impossible to suppose them two widely divergent forms of the same species, as we understand the latter term. That all four species of this type had a common origin I suppose most would be ready to admit, but that they are perfectly distinct now as species I feel certain.

—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E.

LEPIDOPTERA OF SOUTHAMPTON.—At no period since 1880 have insects been so plentiful in this part of the country as during the past season of 1885. We have noted in this neighbourhood 428 species of Lepidoptera in all, not including those taken in the New Forest, distributed as follows:—Rhopalocera, 23 species; Sphinges, 9; Bombyces, 43; Noctuæ, 54; Geometræ, 104; Pyralides, 26; Pterophori, 9; Crambi, 17; Tortrices, 83; Tineæ, 60. The following is a record of the less common species met with:—

Colias edusa, one specimen seen in a garden at Romsey. *Vanessa cardui*, was fairly plentiful; several larvæ found feeding on *Gnaphalium germanicum*. *Lycena argiolus*, met with in good condition as late as the first week in June; it is always double-brooded in this neighbourhood.

Apatura iris, one larva beaten in the New Forest. *Vanessa urtica*, from some cause was remarkably scarce. *Acherontia atropos*, one larva at Romsey. *Sphinx conrotundi*, two imagines only. *Smerinthus ocellatus*, the larvæ very abundant. *Hylophila bicolorana (quercana)*, *Nudaria senex*, *Calligenia miniata*. *Lithosia griseola* and var. *flava (stramineola)*, both plentiful. *Arctia caia*, only one larva and three imagines met with during the season. *Spilosoma fuliginosa*, *Heterogenea limacodes (testudo)*, two larvæ; one on birch and the other at oak. *Dicranura fureula*, *Notodonta dictæoides*, *N. dromedarius*. *N. trimacula (dodonea)*, pupæ at oak. *Cymatophora duplaris*. *Asphalia ridens*, pupæ at oak. Sugaring for Noctuæ proved a complete failure, so that the number of species met with was small: only fifty-four. *Acronycta tridens*, larvæ. *A. leporina*, one imago in June: in September the larvæ of this species were very abundant, feeding mostly on alder, but also on sallow, willow, and birch: most of the larvæ lose their black tufts and hairs when about half grown, but some retain the tufts till full grown: about two days before commencing to pupate the entire larva, hairs and all, changes to a greenish black colour: it then eats its way into rotten wood, and seals the mouth of the hole with silk: we have not met with this species before in this neighbourhood. *Luperina cespitis*, *Agrotis puta*. *Cirrhœdia xerampelina*, eight pupæ at roots of ash, from which we obtained seven imagines. *Tethea retusa*, *Cleoceris viminalis*. *Phlogophora meticulosa*, two imagines seen after Christmas, and several during November and December. *Xylina ornithopus (rhizolitha)*, *Rivula sericealis*. Among the Geometræ we met with the following:—*Epione apiciaria*, *E. adrenaria*, *Eugonia alniaria (tiliaria)*, *E. fuscantaria*, *E. erosaria*, one specimen at light at Southampton. *Amphidasys strataria (prodomaria)*, *Cleora glabraria*, *Boarmia roboraria*, and *Tephrosia consonaria*, in New Forest. *T. luridata (extersaria)*, *T. punctularia*, *Geometra vernaria*, *Zonosoma punctaria*, very abundant, both in spring and autumn. *Z. orbicularia* (New Forest). *Acidalia subsericeata*, *A. immutata*, *A. imitaria*, very plentiful. *A. emutaria* (New Forest), *A. emarginata*. *Macaria alternata* (New Forest), *Abraxas sylvata (ulmata)*, on the chalk downs near Romsey. *Pachylenemia hippocastanaria*, first noted on June 1st; taken again in good condition on July 6th. *Eupithecia abbreviata*, not out till April 26th. *Lobophora sexualisata*, both the imago and larva quite common. *Anticlea cucullata (sinuata)*, one female, taken at dusk at Romsey on July 27th, rather worn. *Coremia designata (propugnata)*, which has been scarce for some years, was again common. *Eucosmia undulata*, *Pelurga comitata*. *Chesias rufata (obliquaria)*, fourteen larvæ obtained, out of which number twelve were ichneumoned; last year we obtained eight larvæ, all of which were stung. Among the Pyralides were:—*Pyralis glaucinalis*, *Nemophila noctuella (hybridalis)*, extremely abundant. *Scopula ferrugalis*, *Euleia verbascalis*, *Perinephele lancealis*.

Among Pterophori:—*Platyptilia bertrami*, *Edematophorus lithodactylus*, *Leioptilus microdactylus*. Among the Crambi were:—*Crambus falsellus*, *C. dunetellus*, *C. hamellus* (New Forest), *C. perlellus*, *C. warringtonellus*, *C. inquinatellus*, *C. geniculeus*, *Homocosoma sinuella*, *Aphomia sociella*, *Achroa grisella* (*alveariella*). Of the Tortrices we obtained:—*Dichelia grotiana*, *Eneetra pilleriana* (New Forest), *Orthotania antiquana*, *O. striana*, *Phoxopteryx siculana*, *P. uncana*, *P. biarcuana*, *P. derasana*, *Retinia pinicolana*, *R. turionana*, *Stigmonota regiana*, *Dicrorampha politana*, *Choreutes myllerana* (*scintillulana*), *Eupocilia nana*, *E. ambigua*, five specimens taken during first week in June amongst birches. Of the Tinea:—*Talerporia pseudo-bombycella*, *Adela degeerella*, *Hypnomena vigintipunctatus*, *Cerostoma sylvella*, and *Henicostoma lobella*.—W. R. BUCKELL, 4, Laura Place, Southampton; E. BUCKELL, Romsey; March, 1886.

LEPIDOPTERA IN MIDDLESEX.—As far as the Macro-Lepidoptera of Middlesex are concerned, I can fully indorse the very interesting remarks of Mr. T. D. A. Cockerell in the March number of the 'Entomologist.' Having collected for some years in the neighbourhood of Chiswick, I have a tolerable acquaintance with its entomological fauna. We have here at least 156 species of Macro-Lepidoptera, besides a few more which are of doubtful occurrence. The Rhopalocera number fifteen species, including *Vanessa polychloros*, *Epinephele ianira*, *Lycæna icarus*, and *L. argiolus*, of which last we have the two broods. The Sphinges are 10:—*Chærocampa porcellus*, *C. elpenor*, *Macroglossa stellatarum*, *Sesia tipuliformis*, *S. myopiformis*, and five others. Of the Bombyces twenty-five species occur, including *Arctia villica*, *Heptamelus sylvanus*, *Drepana lacertinaria*, *D. falcatoria*, *Dicranura jurecula*, *D. bifida*, and *Notodonta dictæa*. Among the fifty-eight Noctuæ recorded are the following species:—*Bryophila perla*, *Hydræcia micacea*, *Xylophasia hepatica*, *Apamea ophiogramma*, *Triphæna interjecta*, *Anchocelis lunosa*, *Calymnia affinis*, *Hadena trifolii* (*chenopodii*), and *Cucullia chamomillæ*. The Geometræ at present only reach a total of forty-eight species, but I am certain that others are to be found in the neighbourhood. *Ligdia adustata*, *Eupithecia coronata*, *E. rectangulata*, *Melanippe rivata*, *M. sociata*, *M. montanata*, *Eucosmia certata*, *Cidaria silaceata*, *C. dotata*, *Pelurga comitata*, all occur in the district. I think I have now given a list sufficient to prove that there are still many insects to be taken within the metropolitan district.—ALFRED SICH; Chiswick, W., March 22nd, 1886.

LEPIDOPTERA OF CHISWICK.—My recollections of collecting at Chiswick fifteen years ago, and further back still, left me with the impression that a good many species occurred among the market-gardens and in the lanes next the grounds of the Horticultural Society. Changes since then have altered the locality, so that some have disappeared; and it would require now brave indifference to the public gaze to flourish a net where I used to find semi-rural retreats. To the Sphinges might then have been added *Macroglossa stellatarum*, occurring in very small numbers on *Galium* along the hedgerows; and, what probably still remain, *Sesia tipuliformis* and *S. myopæformis*, breeding in the orchards. Mr. Cockerell does not name the familiar *Cossus* (Entom. 65); omitted by accident, I presume, since it is common all round London. *Hepialus lupulinus* was sometimes frequent on palings, with several of the species popularly called "waves" (Acidaliidæ). Amongst Noctuæ there were many stragglers, but none abundant, except the garden pests, like *Mamestra brassicæ*, *M. persicariæ*, &c.—J. R. S. CLIFFORD; Gravesend, March 1, 1886.

LEPIDOPTERA AT WISBECH.—The past season was, generally, only an average one in this neighbourhood, the most notable exceptions being the comparative abundance of pupæ of *Hypsipetes ruberata* in the early part of the year, and the swarms of *Nonagria lutosa* at light in the autumn. Among other things which were fairly plentiful I may mention *Smerinthus tiliæ*, seven of which I netted one evening, one, a male, being a very red variety; *Ennomos alniaria* (*tiliaria*), and *Stigmonota regiana*. *Leucoma salicis*, too, formerly an abundant species here, but which had rarely been taken for many years, put in an appearance in moderate numbers. I took one *Asteroscopus sphinx* (*cassinea*) at light on November 10th.—GEORGE BALDING; Ruby Street, Wisbech, February, 1886.

LEPIDOPTERA OF PURBECK.—In your notice of the Lepidoptera of Purbeck (Entom. 95), in vol. vi. of the 'Dorset Field Club Proceedings,' you remark upon there being but few authorities given for the various records. The fact is that where no special authority for a record is given, the insect named in the list has been taken by either Mr. Digby or myself. We ought perhaps to have stated this more plainly in the preface.—EUSTACE R. BANKES; The Rectory, Corfe Castle, April 6, 1886.

CAPTURES AT SALLOW-BLOOM AT CHRISTCHURCH, &c.—The following is a list of my captures this year at sallow, during a fortnight's stay in this neighbourhood from the first week in April:—*Calocampa exoleta*, *Xylina ornithopus (rhizolitha)*, *Xylocampa areola (lithoriza)*, *Pachnobia rubricosa*, *Tæniocampa munda*, *T. gracilis*, *T. pulverulenta (cruda)*, the three commoner species of *Tæniocampa* being in great abundance; at dusk and light, *Anticlea nigrofasciaria (dericata)*, *Cidaria suffumata*, *Hybernia marginaria (progemmaria)*, and *Anisopteryx æscularia*.—J. M. ADYE; Somerford Grange, Christchurch, April 17, 1886.

ABNORMAL PAIRING BETWEEN LEPIDOPTERA.—Amongst the numerous hybrids that has ever been possible to obtain, I am almost certain that never a case such as I here mention has previously occurred. All entomologists are well acquainted with the *Sphinx ligustri*, while perhaps it is not the same case with the *Attacus cecropia* of North America. From the 17th till 19th of February, this year, I had several *S. ligustri* emerge; amongst them was one female. They refused to pair, although kept in a warm room. These, however, lived for a long time, very seldom flying or even moving from their place. On the 22nd of March my *A. cecropia* moths began to emerge, the first being a male. In the cage where this male had emerged was still the female *S. ligustri*. The next morning, about 10.30, I noticed the male *A. cecropia* flying towards the female *S. ligustri*, and finally, after some efforts, paired. This, I thought, was such an extraordinary pairing that I immediately sent for a neighbour of mine, who also studies Entomology, to show him and witness the pairing, in order that my statement should not be doubted. The female laid half of her eggs one day after the pairing, and died. The eggs were half empty and partly dried. This I attribute to the female being too old. The pairing lasted eleven hours and a half, and had the female been a fresh specimen I believe the eggs would have been fertile.—J. A. WENIGER; 11, Cambridge Terrace, Gerrard Street, Islington, N., April, 1886.

LOST LEPIDOPTERA.—Why should *Tapinostola extrema (concolor)* be as good as lost as a British insect, for one now never hears of its capture? It was once before "lost" when a man who used to take it retired, for the good of his country, for some time; but no sooner did he return to his liberty than "*concolor*"

again turned up! So far as I remember the late Thomas Allis said this man used to *smoke* them out of partially dry ditches, when it occurred freely enough with plenty of *Nonagria cannae* and *N. neurica*. Is it that the right time of appearance is lost? though that may be judged by the last two; or is the locality of the right ditches lost? These were said to be near Yaxley. Then also was *Noctua subrosea* thought no more of than any ordinary local moth at the present time. There were plenty to be had before a terrible fire swept its locality, since which none have been caught, or possibly they may not have been sufficiently looked for. By the way, I recently saw some foreign *N. subrosea* very like our British ones, indeed not much different.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, March 7th, 1886.

PRESERVATION OF SMALL LARVÆ.—Can any of your numerous readers tell me a good way of preserving small larvæ? The apparatus mentioned in the 'Insect Hunter's Companion' (pp. 19-21) answers extremely well for the larger caterpillars, but is not adaptable for the small Tortrix or Tineæ larvæ. Is there any way of preserving these minute larvæ, except by inflation, so as to render them convenient for placing in one's cabinet by the side of the imagines?—A. E. HALL; Norbury, Pitsmoor, Sheffield.

EXCHANGING FRESHLY-CAUGHT SPECIMENS.—It has occurred to me that through the introduction of the parcels-post a new method has been opened up for the transmission of insects in exchange. Hitherto we have been in the habit of sending our specimens set and dried by means of "postal boxes," wrapped in cotton-wool, which travel (as a rule) for twopence by letter-post, and sometimes (*experto crede*) get very considerably damaged in the process. But, now that we can send 1 lb. by parcels-post for 3d., why should we not make use of the zinc pocket collecting-box, and send our insects fresh killed and unset, simply pinned on the damp cork, so that our friends may pin and set them after their own favourite fashion? I am bound to say that I have not tried this plan, as the idea has only just occurred to me; but it sounds feasible at all events, and I hope you will allow me to throw out the suggestion for the consideration of entomologists before the busy season sets in.—CHARLES F. THORNEWILL; The Soho, Burton-on-Trent, Feb. 20, 1886.

MOTH TRAP.—I commenced operations several years ago with a trap constructed by myself on the same principle as that described as having been applied to the window of a room in America, and which I thought might be of corresponding service if a box or trap took the place of room. With this I did not do very well, and accordingly from time to time altered and added to the glass arrangements, until, about five years since, I succeeded in constructing as perfect a trap as I think could be devised. I had a sight some time ago of one of the "American moth traps," and found that it was somewhat similar to my own; mine, however, has a "shoot" leading down from the four converging planes of glass, which leaves, as the only aperture of escape, a space about four inches in length by an inch and a quarter wide. The body of the trap is made of wood, and not metal, and I have at the bottom a layer of small branches and leaves instead of the divisions in the American one. I should also mention that my trap was hooked up outside the fanlight of hall door of my late residence, just fitting the fanlight, and was illuminated by a strong gas burner fixed inside the fanlight, having a powerful reflector behind it. I was consequently able to vary the amount of light as desired; it always remained clear and steady, and there was not the slightest fear of any accident. There was an unobstructed view across the River Thames for some fifteen miles, and to this fact I attribute much of my success. My record of captures during the four seasons ending Midsummer last, when I removed to my present home, is as follows:—*Bombyces*, 47 species; *Noctua*, 139; and *Geometra*, 118; making a total of 304 different species. Of this number many were, of course, single captures, but the greater number were taken more or less freely, and in good condition as a whole, numbers of them being equal to bred. It was no uncommon occurrence during the busy time for me to box some forty or fifty specimens every morning that were of use to me, and to let numbers go as well. Of *Micros* I have kept no record, as I do not collect them, but their number was legion. The enclosed portico or porch in front of the hall door was generally pretty freely used as a resting-place by those individuals that did not care to investigate further; consequently I often found as many good things outside as inside the trap. In my present residence I have not the facilities for placing the trap in the same position as before, but have tried

it outside the window of a shed in the garden with a lamp and reflector inside the shed, but the results were quite insignificant; evidently position is everything, and a really good light essential. E. SABINE; 22, The Villas, Erith, March 9th, 1886.

MOTH TRAPS.—In reference to the moth trap described in the "Field Naturalist's Handbook," I made one according to description last summer, and have tried it for several nights during last season, but have trapped nothing, though moths came to light at the windows of a house close by. I should like to know if anyone else has found it successful, and, if so, were the insects very much damaged by fluttering in the trap.—H. KING; 52, Pimlico Road, London, March 3rd, 1886.

MOTH TRAP.—Referring to the remarks and inquiry made by Mr. A. E. Hall (Entom. 45), I may say that in the spring of 1884 I constructed, with but slight modifications of my own, a light trap on the principle of that described by Mr. H. G. Knaggs in his practical little book the 'Lepidopterists' Guide.' The size of my trap is 18 ins. by 13 ins. by 16 ins., with a drawer about three inches deep running along the bottom, thus making the front aperture 13 inches square. I use a lamp with a single inch wick, but a powerful bright reflector. Unfortunately my business arrangements did not permit me to make any use of it during the past season, but during the summer of 1884 I tried it frequently, and hardly ever entirely without success. I usually fixed my trap against the back of the house, facing towards the south-west, at a height of eight or nine feet from the ground. I cannot say that it has secured me any rarities as yet, or even that the "game" so far has been "worth the candle," but amongst the insects thus taken I may mention *Spilosoma lubricipeda* and *S. menthastri* (the former frequently), *Apamea didyma* (oculea), *Rumia luteolata* (cratægata), *Eupithecia vulgata*, *Pionea forficaris* (several times), *Scopula lutealis*, several species of Crambidæ and Tineæ, besides insects of other orders, especially the Diptera. To judge from my experience, dark still nights after a *fine* day are much the best, but unfortunately these are not nearly so plentiful as one could wish. Though at present I by no means regard the trap as a successful agent, I shall certainly give it a further trial if possible during the coming season, as it seems to me that with a little manipulation as

regards the placing, &c., it might perhaps be turned to good account amongst the Micro-Lepidoptera.—L. L. SAMUELS; Victoria Park, Manchester, Feb. 15, 1886.

MIGRATION OF INSECTS.—A proposition has been made in Ceylon for the systematic observation of the singular migration of butterflies in that island. Despite occasional references in the local press, nothing has yet been done towards compiling and editing a scientific and comprehensive record of annual observations. It is proposed, therefore, that volunteers should watch for the migration, and send a post-card bulletin to the editor of the records, noticing date, direction of flight, direction of wind, the weather, and the species. For the last purpose amateur observers are to send one specimen of each species noticed, in order to ensure scientific accuracy. A competent naturalist is stated to have offered to revise, assort, and edit all such notices once or twice a year, and publish a periodical report of progress. The annual summary will appear in the 'Taprobanian Magazine.'

NEWSPAPER ENTOMOLOGY.—In these days of School Boards and cheap science classes it is hardly credible that any person could be found to pen the following paragraph, cut from the 'Western Morning News' of March 31st, 1886, and dated Capetown, March 10th. The italics are our correspondent's, who, in sending this literary curiosity, added, "This is reversing the natural order of things with a vengeance." "From Durban it is reported that much alarm has been caused in the Camperdown district by the scourge of armies of caterpillars which have appeared amongst the forage crops. One army extends a mile and a half deep, and has swept over about seventy acres of fine forage; another, comprising many millions, has eaten every bit of forage in one district; and the two armies are on the eve of joining, when it is feared that more damage will be done than the pest caused in 1878. *It makes its appearance in the form of a small moth, in a few days it sheds its wings, becoming a caterpillar, and in a week it lays eggs, each caterpillar producing two hundred.* They blacken the fields as they move about voraciously eating; and in one place forty acres of forage were reduced to stubble."

ERRATA.—Entom., p. 93, line 3, for "Paris" read "Parà"; and at p. 81, line 8, read "came at 2.30 and for about an hour," instead of "some 230."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—April 7, 1886. Robert M'Lachlan, F.R.S., President, in the chair.—The following were elected Fellows of the Society, *viz.*: Messrs. E. Capron, M.D., J. W. Ellis, L.R.C.P., F. D. Wheeler, M.A., J. B. Bridgman, F.L.S., T. D. Gibson-Carmichael, F.L.S., J. Rhodes, F.R.M.S., A. C. Horner, J. T. Harris, Evan John, Martin Jacoby, J. A. Clark, G. Elisha, and A. Sidney Olliff. Mr. Crowley exhibited a number of Lepidoptera, including a long series of species belonging to the genus *Rhomaleosoma*, containing many unusual forms, lately received from Accra, West Africa; also, from the same locality, about sixteen species of the genus *Charaxes* in remarkably fine condition, and represented by specimens of both sexes. He also exhibited a number of large specimens of *Saturnia* from Natal, and several unknown species of other genera. The Rev. W. W. Fowler exhibited four beetles belonging to the family Carabidæ. Three of them had been taken twenty years ago on the banks of the Clyde, and had lately been identified as *Anchomenus sahlbergi* (Chaud.), a species new to Europe, having hitherto only been found in Siberia. The remaining specimen was *Anchomenus archangelicus* (Sahlb.), a North European species nearly related to *A. sahlbergi*, but easily distinguishable therefrom by the greater depth of the striæ of the elytra. Mr. J. W. Slater exhibited, on behalf of Mr. Mutch, a spider belonging to the genus *Galeodes*, and a Lamellicorn beetle belonging to the genus *Cetonia*, which was at first supposed to be a monstrosity, but was afterwards found to owe its unusual appearance to the right elytron having been broken off and fixed on in a reversed position. He also exhibited an undetermined species of a beetle belonging to the family Curculionidæ. Mr. Billups exhibited a specimen of *Bassus bizonarius*, an ichneumon new to Britain, taken at Peckham in May, 1885; also a number of specimens of another parasite, *Dimeris mira* (Ruthe), taken in Headley Lane, Surrey, in March last. Mr. White exhibited preserved specimens of the larvæ of two species of the genus *Catocala*, for the purpose of calling attention to some remarkable processes on the under side; and Prof. Meldola and Mr. J. Jenner Weir made some observations on them. Mr. S. Edwards exhibited an unknown

exotic spider, found in his orchid house at Blackheath. Mr. H. Goss exhibited two remarkable varieties of the male of *Argynnis paphia*, taken in Sussex and Hampshire respectively. Mr. A. G. Butler communicated a paper entitled "Descriptions and remarks upon five new Noctuid Moths from Japan." The Rev. W. W. Fowler read a paper on "New genera and species of *Languriide*," chiefly from specimens in the collections of the British Museum, the Cambridge Museum, Mr. Lewis's Ceylon collection, and the collection of the Rev. H. S. Gorham. In alluding to a species described in this paper, Mr. Champion remarked that he had taken the elongate form, and also the broader form, on trees as well as on low herbage in Central America. Dr. Sharp remarked that Mr. Lewis's experience of the habits of the species in Ceylon appeared to have been different. Dr. Sharp read a paper "On some proposed transfers of generic names." This paper called attention to a practice advocated by Mons. Des Gozis, which was apparently extending on the Continent, of transferring the names of some of the commonest genera to other genera. The extreme confusion caused by the practice was pointed out, and the author showed briefly that the theory on which Mons. Des Gozis's system was based was as unsound as the practice itself was objectionable. Considerable discussion followed the reading of this paper, in which the Rev. W. W. Fowler, Mr. Waterhouse, Mr. M'Lachlan, Dr. Sharp, Mr. Pascoe, and Mr. Dunning took part. The last-named gentleman said that the discussion reminded him of a similar one, on the application of the law of priority to genera, which took place at a meeting of the Society nearly twenty years ago. The project was then condemned as unanimously as that of Mons. Des Gozis had been that evening; and he trusted that entomologists would hear no more of it.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 1st, 1886.* R. Adkin, Esq., F.E.S., President, in the chair.—Messrs. C. H. Watson, G. T. Shearwood, Stanley Edwards, A. Beaumont, and B. W. Adkin, were elected members. Mr. Goldthwaite exhibited series of *Cænonympha typhon*, Rott., and *Erebia æthiops*, Esp. Mr. Cooper: *Drepana binaria*, Hufn., *D. cultraria*, Fb., and *Erastria venustula*, Hb., from Epping Forest; imagines and pupa-cases of *Eupœcilia ambiguella*, Hb.,

from the New Forest, and varieties of *Lycæna icarus*, Rott. Mr. J. T. Williams: a fine series of *Eriogaster lanestris*, L., and varieties of *Hybernia leucophæaria*, Schiff. Mr. E. Joy: *Nyssia hispidaria*, Fb. Mr. Stevens: *Asteroscopus nubeculosa*, Esp. Messrs. South and Tugwell: fine series of *Hybernia marginaria*, Bork., var. *fuscata*. Mr. South said the specimens exhibited were bred from ova received from Mr. J. Harrison, of Barnsley, who stated that the eggs were deposited by a dark female which had been in union with a melanic male. Mr. Billups exhibited the following *Coleoptera* taken by him in Headley Lane on the 22nd March, 1886:—*Panagadæus quadripustulatus*, H.M.; *Lebia chlorocephala*, E. H., and *Brachinus crepitans*, L.; also two species of *Diptera*,—*Sciaria pulicaria*, Hoff., and *Trichocera regellationis*, L.,—bred from apples. Exhibits in other branches of Natural History were also of an interesting character. Mr. Cooper exhibited several groups of eggs of British birds. Mr. W. West read a paper on “The Entozoa,” which was illustrated by diagrams and the exhibition of microscopical specimens.

April 15th. R. Adkin, Esq., F.E.S., President, in the chair.—Messrs. T. D. A. Cockerell, A. J. Windybank, T. P. Newman, W. H. Wright, T. Gibbs, jun., and W. F. V. de Kane, were elected members. Mr. Mera exhibited a fine series of *Syntomis phegea*, Linn., bred from ova deposited by a female taken in Italy. Mr. E. Joy: a variety of *Cænonympha pamphilus*, L., taken at Hadley Wood, near Barnet. Mr. Tugwell: a bred series of the Dover form of *Cidaria suffumata*, Hb. Mr. Wellman: specimens of *Phoxopteryx upupana*, Tr. Mr. Billups exhibited a curious construction which had been found by Mr. J. T. Williams at the root of a tree in his garden at Foots Cray. The formation consisted of about fifteen or sixteen fusiform cocoons composed of a felt-like material, and arranged side by side, vertically and transversely, the whole forming a pear-shaped mass. Each cocoon contained a larva which Mr. Billups said was certainly not dipterous or hymenopterous, but might probably be the larva of a species of *Lepidoptera*. Several members concurred in this opinion.—H. W. BARKER, W. A. PEARCE, *Hon. Secs.*

REVIEW.

Ninth Annual Report of the Lancashire and Cheshire Entomological Society, 1885.

This Report is by no means encouraging, and suggests that, through the influence of "bad times" or other reason, Entomology in the Liverpool district is rather at a discount, at least as indicated by its representative Society. This report consists of a short presidential address by Mr. S. J. Capper and a very meagre report by the Secretary, who states that in consequence of the limited attendance of members at the excursions last year this pleasant feature is this season to be discontinued. The revenue has also been so restricted that the balance appears on the wrong side, even though economy seems to have been practised, as no books have been added to the library by purchase during the past year. Surely some effort should be made to resuscitate the fallen fortunes of the Society, which ought to number more than fifty-eight members, as it is supposed to represent the populous counties of Lancashire and Cheshire.

OBITUARY.

THOMAS EDWARD—immortalised by Smiles in his 'Life of a Scottish Naturalist'—died April 27th, 1886, aged 72 years, having been born on Christmas Day, 1814. Edward's knowledge of Natural History was rather diffuse than special; so that as an entomologist he collected all orders without gaining exceptional knowledge of any. In him the taste for Natural History seemed to have been inborn, as may be gathered from the many interesting and amusing stories told by Mr. Smiles in his 'Life.' By the lucky chance of that author pitching upon Edward, when searching for a subject for a new work, the self-taught naturalist became suddenly celebrated and fashionable; the result being that from comparative poverty Edward was raised to a condition of comfort by a subscription which realised about £333, and later he received a pension of £50 a year by order of the Queen. There is much to admire in the unsophisticated life of this type of Nature's gentleman, a type by no means so rare among the working naturalists of this country as is imagined by the many who only see the world superficially.—J. T. C.

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VARIATIONS OF *MELITÆA ATHALIA*, Rott.

BY W. F. DE VISMES KANE, M.R.I.A., F.E.S.

IN the report of the South London Entomological and Natural History Society for 1885 there are some interesting notes, by Mr. South, on forms of *Melitæa athalia*, Rott., bred from North Devon larvæ. Certain of the specimens are stated to approach very closely to Swiss *M. aurelia*, Nick.; another to approximate to Swiss *N. dictynna*, Esp.; and some of the under sides to resemble those of Swiss *M. parthenie*, Bkh.

Mr. South's notes of these forms are very reconcilable with the unstable conditions that at present prevail in the group of *Melitæa*, comprising the allied species of *athalia*, Rott., *aurelia*, Nick., *parthenie*, Bkh., *dictynna*, Esp., and their varieties. The group is undoubtedly a perplexing one; and with its topomorphic, oromorphic (mountain), and pediomorphic (plain) forms, presents a field for laborious but interesting study.

In the first place I may point out that the patterns presented by the under sides are extremely variable and uncertain; that of *dictynna*, however, presenting some remarkable features, variable indeed, and partially reproduced among specimens of allied species, but still of a distinct character. The pearly band of the variety *varia* also is very characteristic, but merges into that of the type, *parthenie*, Bkh. As all the rest are infinitely changeable both in colour and shape of marking, no conclusion can, I think, safely be drawn from the under side of Mr. South's Devon insects.

As to the similarity to *M. aurelia*, Nick., it will be found that

in Switzerland it sometimes graduates indefinitely into a form of *athalia*, Rott., and is very variable. Mr. South has, perhaps, specimens of this Swiss form. The German *aurelia* is a finer insect than the Swiss. The Swiss *athalia*, Rott., is also a smaller and less strikingly marked insect than that of North Germany, and, as Mr. South notices among his Swiss examples, often approaches *parthenie*, Bkh.

There is an oromorphic form also of *M. athalia*, Rott., that is very near to the pediomorphic one of *M. dictynna*, Bkh., which latter is larger, better coloured, and with more spots on the hind wings than that which occurs at higher elevations. Different altitudes, in like manner, affect the Swiss *M. athalia*, Rott., which in the warmer lowland is finer in size and colour, and whose extreme pediomorphic form is represented by the aberration *corythalia* of France. (I am in doubt about the synonymy of *corythalia*, Hb., of Sven Lampa's 'Catalogue of Scandinavian Macro-Lepidoptera.')

Melitæa parthenie, Bkh., shows parallel variations. The North Swiss form is large and bright. The oromorphic form graduates insensibly into the small var. *varia*. There is also an approximation to *M. dictynna* sometimes observable; but the characteristic mentioned in my 'Handbook of European Butterflies,' namely, of the palpi being yellow above, is, I think, pretty constant. The question, which certainly forces itself upon one's attention, is whether these various specific types, which graduate into each other so remarkably, do really constitute true species? The group, as defined above, being at present in such an unstable condition throughout, renders any decision very difficult.

The species thus named, and usually accepted, are fairly definite; and are of use, at any rate, in so far as they indicate centres of more or less stability, geographically widely spread, and whose patterns are separated one from the other by intermediate links of more unstable character.

With regard to the geographical range of these species in question, I may remark that I have Scandinavian (Upland) specimens of *M. athalia* which only differ in a slightly paler tone of fulvous from Central European forms. Both *M. aurelia*, Nick., and *M. parthenie*, Bkh., are reported from various parts of Scandinavia; and the var. *varia* from Norway, by Herr Sven Lampa.

OBSERVATIONS ON *ACHERONTIA ATROPOS*.

BY RICHARD SOUTH, F.E.S.

THE native home of *Acherontia atropos* is probably in sub-tropical regions of Africa and Arabia, but the species has a geographical range extending throughout Europe and Western Asia almost to the northern boundary of the colder temperate zone. This boundary is represented by the isotherm, or line of mean annual temperature of $42\frac{1}{2}^{\circ}$.

The occurrence of *atropos* in any country or district within the colder temperate zone is, however, of a somewhat fluctuating character. In Great Britain, for instance, the species has been observed at some time or other in nearly every part of the kingdom, from the Scilly Isles to the Orkneys and Shetlands; also in many parts of Ireland. If I am correctly informed it would seem that the species is observed almost every year in one or more counties on our eastern or south-eastern coasts; and Mr. Packman, of Dartford, tells me that he cannot remember any year in which larvæ of *atropos* did not occur in greater or lesser numbers in his district. On the other hand, the annual recurrence of *atropos* in the majority of British localities, from which it has been recorded, is uncertain.

☞ The records concerning *atropos* in our entomological magazines are not so full and complete as to furnish a register of all imagines observed or larvæ and pupæ noticed in the United Kingdom for any given period; still such records afford data from which we may infer the yearly abundance or scarcity of the species. Referring then to the magazines for twenty-one years past, it will be found that from 1865 to 1872 *atropos* was probably scarce in the year 1866 only; but that between 1872 and 1877 there was a period of four years during which the species was apparently very scarce, as not a single record of the occurrence of *atropos* in any stage in the British Islands is to be found for the years 1873 and 1874, and only two imagines are noted for 1875 and 1876 respectively. Immediately following this long interval of scarcity the species appears to have been common for two years in succession (locally, 1877; and generally, 1878); then in alternate years it seems to have been generally scarce or locally common till 1885, when it was once more plentiful or even abundant, and

at the same time widely distributed in England. The occurrence of *atropos* in the British Islands since 1864 is as follows:—scarce—1866, 1873, 1874, 1875, 1876, 1879, 1881, 1883; common in certain localities only—1867, 1869, 1870, 1871, 1872, 1877, 1880, 1882, 1884; widely distributed and generally common—1865, 1868, 1878, 1885.

Looking over the dates of capture, I find that during the past twenty years one or more examples of *atropos* have been taken in each month from May to November inclusively. The latter date, however, appears to be exceptional, as only one is recorded for this month. July stands next in order with two; June and August three each; May and October five each. For September the records are not altogether clear, but I find that ten specimens are distinctly noted as having been captured in this month. It would therefore seem that September is pre-eminently the month for imagines of *atropos*, at least in certain years, as August appears to be for larvæ of the species. As regards the larva, the earliest recorded date is July 30th, when a dozen larvæ were found at Burton-on-Trent, in 1878, feeding on *Lycium barbarum*, and the latest October. The last refers to a single larva found, together with twenty-six pupæ, in potato fields near Liverpool, also in 1878. Packman assures me that he has sometimes obtained examples almost full fed at the end of June.

I may add that in Morocco *atropos* is on the wing in March, and at Algiers and various places along the Mediterranean imagines are frequent in August, while at Gallipoli, on the European side of the Sea of Marmora, Mr. G. F. Mathew has found larvæ of the species abundant in October and November.

The earliest date at which pupæ of *atropos* have been obtained in a state of nature in this country is, as far as I am aware, the end of August. These disclosed imagines in September. When the potatoes are raised in September and October is, however, the time that pupæ usually come into the possession of entomologists. Various plans for forcing the imago of *atropos* have recently been referred to in these pages, and I notice that employed by Dr. Livett, *ante*, p. 126, because the results obtained contrast so curiously with Mr. Anderson's experiment (*Entom.* xi., 188). The latter gentleman used what may be termed the "dry process," and from twelve pupæ obtained eight imagines, but not one of these could be considered forced. The order of

emergence was November (1), June (6), July (1). Dr. Livett combined moisture with warmth, and induced imagines to emerge in December and three following months. Both methods were identical in one particular, that is the fires, before which the pupæ were placed during the day, were not kept up at night. I know well what tender subjects the pupæ of *atropos* are, but if it is permissible for me to form an opinion after a somewhat limited experience in their treatment, I would say that in a general way, if carefully protected from cold and left undisturbed, they will yield imagines in the early summer months, almost, or perhaps quite, as well as they would do if put through a course of "forcing" during the winter. I shall have occasion, however, to qualify this opinion presently.

That *atropos* is nomadic in its habits I see no reason to doubt. The species has frequently been observed at sea, often at a considerable distance from land, and in situations where its presence could not be involuntary. The occurrence of *atropos* in unusual places on land is not generally considered as evidence of the insect's roaming disposition, but I think we can hardly look upon its appearance in such unlikely places as the busy thoroughfares of our largest cities in any other light. Then again, is it not probable that the specimens captured in the Orkneys, Shetlands, and Isle of Man, were either visitors from the mainland or the issue of female *atropos* which had visited those isles in the summer months, seeing that the occurrence of the species in those places is an extremely rare event?

If it is a fact that *atropos* occurs every year in Kent or any other county on the east or south-east coasts, such counties may be considered as the nurseries of the species in Britain, and we may suppose that imagines occasionally or habitually forsake the place of their birth and roam about over the other portions of the country, often extending their rambles to the most distant parts of our islands. In the course of their peregrinations vagrant female *atropos* may deposit ova here and there, and subsequently larvæ and pupæ be found in localities where the species is certainly not of annual occurrence.

On the other hand, it may be contended that, although *atropos* is rarely seen in certain localities, still we have no proof that the species is not present in those places each year, and therefore, in the absence of such proof, we ought not to assume that *atropos*

does not occur annually therein. It is certainly possible that the species may breed regularly in almost any locality in which it has been observed, but that it rarely comes under the notice of the naturalist. I cannot, however, think this is probable, and should meet any such argument by reference to the remarks appended to notices of captures recorded by entomologists who have long resided in particular districts. From such observations it is quite clear that *atropos* is either a decided rarity in, or novel to, many localities in Great Britain. I submit that it is quite in accord with the facts to conclude that *atropos* is rather a wanderer in, than a denizen of, the greater portion of Britain, and that the imagines and larvæ which occur outside those counties in which the species is more or less constant, are either migrants or the offspring of migrants. If it is admitted that *atropos* is a nomad, we may, without doing violence to the possible, very well suppose that examples sometimes, perhaps not infrequently or in small numbers, come to these islands from the continent. I cannot understand the abnormal abundance of the species in certain years in any other way than by supposing that our *atropos* are, at such times, assisted in the work of reproduction and distribution by immigrants.

It is generally understood that there is but one brood of *atropos* each year in this country. Whether this is ordinarily the case or not I am unable to say, but in some years there would certainly appear to be two broods of the species with us. For instance, the nearly full-fed larvæ found at the end of June would surely attain the imago state before September. Probably such early larvæ are from ova deposited early in May,* and produce imagines at the end of July or beginning of August, and these again become the progenitors of the late September and October specimens as well as of those which remain in pupa until the following year. Then as to the parents of the June larvæ, the question which suggests itself to me is, Were they British born?—that is, had they emerged from pupæ in any part of the British Islands? We see that, excepting the November specimen, Mr. Anderson did not get out his imagines before

* In 1878 single specimens of *atropos* were taken on the South Devon coast, and on the sea-shore, Antrim, N. Ireland, on the 6th and 8th of May respectively, and another example was captured in the City of London, May 2nd, 1882.—R. S.

June. I am also aware of other instances where the results have been the same. The few pupæ I have had at various times disclosed imagines in June, and the earliest specimen I know of from hybernated pupa was bred on the 27th of May. I think it probable, therefore, that specimens of *atropos* seen here early in May have not emerged from pupæ in this country, but that they are immigrants.

This is just where the difficulty comes in with regard to treating pupæ of *atropos* found in the autumn, the imagines from which have not emerged by the end of October. If they are of immigrant parentage they will probably require artificial warmth to bring them to maturity, but if from British stock all that is necessary is to keep the frost from them. Perhaps larvæ which are to produce imagines in the following year go some depth into the ground to pupate, where they are protected from the effects of ordinary frosts, while those destined to attain the imago state the same year pupate either on or near the surface. If this were so some indication of the treatment required would be afforded by noting the situation in the soil of the pupæ found, but, even if we could take the position of the pupæ as a guide, we have no certain clue to their origin, and, although the simple precautions adverted to would suffice with pupæ from British stock, the same thing would not do, or at least would be risky, with pupæ from immigrant parents. I think, however, when larvæ and pupæ of *atropos* are more than usually abundant, we may fairly suspect that the foreign element is largely represented, and consequently we should treat any pupæ we may have at such times with becoming tenderness.

In conclusion I may say that a species is none the less British because the representatives of such species in this country are the offspring of immigrant parents. In whatever country a species may naturally effect its metamorphoses, although it may not be native thereto, it has a legitimate right to be considered as belonging to the fauna of that country. (Of course, imagines from imported ova, larvæ, or pupæ, even if captured in this country, are not British.) If we were only to recognise as British such species as were actually indigenous, I am afraid that we should have some trouble in drawing up a satisfactory insect fauna list.

To what extent the insect fauna of the British Islands has been augmented by immigration alone since they were separated

from the Continent of Europe we have no means of ascertaining, but I think that in the present day there are certain species which from time to time land on our shores and endeavour to colonise in suitable localities in our islands. The majority of these species seem, however, unable to effect a permanent establishment here.

12, Abbey Gardens, London, N.W., May., 1886.

A NEW CECID.

BY PETER INCHBALD, F.L.S., AND R. H. MEADE, M.D.

CECIDOMYIA MURICATÆ, n. sp.

I HAVE to record that I have succeeded, during the present month, in rearing a Cecid reputedly new to science. At all events Bergenstamm, in his Synopsis, published in 1876, says of it, "Imago unbekannt"; adding, as he groups it with other unknown and undescribed Cecids in the imago state, on the authority of Professor Loew, "Die larven deformiren die Früchte von *Carex muricata*." I gathered the affected heads of the *Carex* in July of last year. The larva was then feeding on the embryo-nucule of the flowers, ensconced in the utricle, which is open at the end for the protrusion of the stigmas. Within this sac it pupated, spinning for itself a slight papery cocoon towards the end of the autumn. By removing a portion of the utricle the larvæ and pupæ were visible by means of a lens. The seed-heads were kept slightly moist by occasional sprinklings during the winter months. In February or March of the present year all had pupated. At the end of April the red pupæ became redder through their slim covering, and I inferred that a further change was approaching. On the 16th of May my patience was rewarded: twelve Cecids appeared in my glass-topped box, mostly females; but happily I observed among them a few males. Each succeeding morning, for a week and more, gave me a bevy of the tiny gall-gnat. I counted upwards of twenty on one morning. Dr. Meade, to whom I sent specimens, has kindly offered to append a scientific diagnosis of the species. This, I need hardly say, I much prize, as it comes from one that is an expert in the smaller and more abstruse forms of dipterous life, which he has made a special

study for many years. I have pleasure in forwarding Dr. Meade's notes on the subject.—PETER INCHBALD; Fulwith Grange, near Harrogate, May, 1886.

CECIDOMYIA MURICATÆ, sp. n.

Nigra; antennæ 17-articulatæ, mas et fœm., articuli, mas petiolati, fœm. sessiles; epistoma cirro albido ornatum; thorax nigrescens, vittis tribus atro-micantibus signatus, crinibus albidis lateribusque vestitus; humeri flavi; scutellum flavum baso nigrum; abdomen rufo-fuscum, albo-pilosum; apex cum forcipite pallidus, mas; oviductus elongatus tenuisque, absque lamellis in fœm.; pedes fusci, subtus albo-pilosi, geniculis tarsisque apice sanguineis; alæ cinereæ, nervo cubitali recto. Long. mas $1\frac{1}{2}$, fœm. $1\frac{3}{4}$ –2 mm.

Head, with forehead and occiput, black, clothed with white hairs; face brownish yellow, inner margins of eyes bordered by a yellow line; epistome furnished with a tuft of yellowish-white hairs; palpi pale yellow; antennæ blackish brown, seventeen-jointed in both sexes, nearly as long as the body in the male, about half the length in the female; joints petiolated in the former, sessile in the latter, verticillated with white hairs in both; joints and petioles about equal in length in the male along the proximal two-thirds of the antennæ, then decreasing a little in size, and becoming rather nearer together towards the end; in the female the joints lessen gradually in size towards the apex of the antennæ, the last joint being taper in form, and half as long again as the penultimate one. Thorax dark brown, marked with three broad, longitudinal, shining black stripes, which are confluent in front and become indistinct towards the back of the thorax; the sides are thinly clothed with white hairs, which form a small tuft in front of the root of each wing; a few scattered white hairs are arranged in two short longitudinal lines on the middle of the dorsum; the shoulder points are marked with a yellow spot; the roots of the wings are bright red. Scutellum black at the base and reddish yellow at the end and sides, from whence the same colour extends to the sides of the thorax and bases of the wings. Metathorax black. Abdomen of a uniform reddish-brown colour, darker in the male than female; the first segment is black, and in dried specimens the posterior margins of the segments are darkened; the edges and sides of the

segments are clothed with white hairs; the neutral surface is flesh-coloured (much brighter in the female), and has a broad interrupted brown band down the centre; the last two abdominal segments are narrowed in the male, and, together with the forceps, testaceous in colour: the oviduct in the female (when protruded) is long and slender without terminal lamellæ; it has the basal joint round and yellow, the second one elongated, furrowed, and brown, and the terminal one slender and pointed, half as long again as the second, pale yellow at its base, brown in the centre, and pale pink at the apex. Halteres brown, with the stalks pale at their bases, and with the knobs clothed with patches of white hairs. Wings covered with dark pubescence, cubital veins straight and joining the costal vein a good way in front of the apex of the wing; both these veins look thick, being clothed with scales, and have a reddish tinge; the lower branch of the anal vein forms a uniform graceful curve to the hind border of the wing. Legs brown, with the basal halves of the femora pale, and the knees with the ends of the tarsi pink; the under surfaces of the legs are thickly clothed with white hairs which gives them a shining silvery appearance.—R. H. MEADE; Bradford.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN THE NEW FOREST.—A good specimen of *V. antiopa* was seen on August 3rd, 1885, by Mr. Fynes Clinton, of Christchurch, who was accompanied by a friendly expert. It was first observed to settle among small birches on the Christchurch Road, between Lyndhurst and Holmsley; and on being disturbed it flew across an adjoining stream leading to a marsh, where it unfortunately got out of sight.—J. M. ADYE; Somerford Grange, Christchurch, May 19, 1866.

FURTHER NOTE ON *LYCENA ARGOLUS*.—The communications made to the Entomologist this year on this interesting lepidopteron are very instructive. The subject was introduced by Mr. Harcourt Bath, pp. 13 and 29-33, followed by one by myself, pp. 50-52: these led to others, among which were notes from Mr. W. H. Harwood, pp. 88-89; from Mr. E. Sabine, p. 89; from Messrs. H. Goss, W. Farren, G. J. Grapes, and J. R. S. Clifford, pp. 122-123. These communications establish the fact,

which I believe no one disputes, that the insect is double-brooded, but the question still remains open, is it double-brooded in districts where the holly alone is found? The evidence that it is double-brooded in some parts of the New Forest is conclusive, but there are many large areas in that extensive tract, ten miles in length, where the ivy is not found; for instance, at Hincheslea the holly is very abundant, and in the spring *Lycena argiolus* is common. I have searched in vain for it in July and August, and having made a most careful examination all round the enclosure, I could find no ivy. Then I had the testimony of James, George, and Charles Gulliver, to the effect that in their experience the insect was not in the New Forest double-brooded. I may remark that Hincheslea is quite isolated from the rest of the forest by a wide expanse of heath surrounding it. In the Rinefield Sandys district, where there is a considerable quantity of ivy, I have spent many weary hours in beating for the larva in autumn, but without success. It will be apparent that all this evidence was of a negative character, and I therefore forbore to publish it, and a reference to my communication will show that I have not written one word to the effect that *Lycena argiolus* was not double-brooded in the New Forest, well knowing the great extent of the ground. The ivy climbs deciduous trees only as a rule. I have but once seen it on the holly; that was in my own garden under artificial conditions. Upon the whole, I am inclined to maintain my position that *Lycena argiolus* is in England both monogonentic and digonentic, and should be very glad to have any further evidence of its single-broodedness. There are three other British species regarding which distinct evidence of a second emergence of the imago would be valuable, viz., *Argynnis selene*, *A. euphrosyne*, and *Euchloë cardamines*. I have never captured any of these insects in the autumn, but in the very wet summer of 1879 I took, in the New Forest, *Argynnis selene* on the 9th August, but I regard this as a case of retarded emergence.—J. JENNER WEIR; Beckenham, Kent, May 12, 1886.

LYCENA ARGIOLUS IN SOMERSETSHIRE.—In this district, where both holly and ivy are somewhat plentiful, *Lycena argiolus* is generally distributed, but not abundant. During the four years that I have been in this locality I have always noticed it both in the spring and autumn. It usually makes its first appearance about the third week in April, and both sexes may be seen flying

over the holly when in bloom. It is also partial to the blossoms of the *Laurustinus*, but, as far as I have noticed, only for the sweets obtained therefrom. In August I have seen the females flitting over the ivy, and last season captured one on bramble blossoms, but it was only feeding on them. In parts of Dorsetshire also, on the chalk formation, I have also noticed it at two seasons of the year. I feel confident that in both these localities it is double-brooded. The last two seasons here it has been quite scarce, and up to the present time this season I have not yet seen it. In the early stage of its existence I think it is much preyed upon by those insect-loving birds the chiffchaff and willow wren. It will be remembered that Westwood as well as French entomologists mention *Rhamnus frangula* as one of its food plants.—T. B. JEFFBRY; Clevedon, April 27, 1886.

FOOD-PLANTS OF *MELITEA ATHALIA*.—In his "Notes from Abbots Wood" (Entom. xviii. 265), Mr. W. F. Hawes speaks of *Melampyrum pratense* as the food-plant of the larva of *Melitea athalia*, and I should very much like to know upon what other plants it has been found in this country. I believe that before my discovery of it on *Melampyrum*, in 1871, it was supposed to feed exclusively upon *Plantago lanceolata*; but since then I have also found it in abundance on *Digitalis purpurea*, and a single larva on *Teucrium scorodonia*. Last spring I could find no larvæ, though the perfect insects had been unusually abundant the previous season. The reason of my want of success was that the usual food-plants were absent, for, though I searched many acres, I could find no *Digitalis*, and only a couple of small plants of *Melampyrum*. In June I made a special journey to the locality to see whether the perfect insects would put in an appearance, and, somewhat to my surprise, found them almost as common as usual; but those which occurred over that portion of the wood where I had searched for larvæ were, with few exceptions, of little more than half the usual size; whereas in the part which I had not searched they were quite of the normal size, and there I found a fair quantity of *Melampyrum* growing. I conclude, therefore, that the small specimens were produced from larvæ which either fed up upon an insufficient supply of their proper food, or upon some substitute—possibly *Teucrium*—which did not nourish them properly, and that their inferior size was thus due to semi-starvation.—W. H. HARWOOD; Colchester.

ACHERONTIA ATROPOS AT GREENWICH.—On May 18th last one of my boys took a fine specimen of the above insect resting on some palings a few yards from the Greenwich Road.—C. LEVETT; 104, Malpas Road, Brockley, May 26, 1886.

ACHERONTIA ATROPOS.—As the past season has been so prolific in producing *A. atropos*, it may perhaps be interesting to relate a little incident which happened in a village near Saffron Walden, Essex, in the year 1876. A farm bailiff's cottage was luxuriantly covered by the nightshade (*Solanum dulcamara*), which in the autumn was all but stripped of the leaves by numbers of larvæ of *A. atropos*. The ignorant owner, after holding a consultation with the village people, came to the conclusion that it was a visitation of locusts, and set to work to kill the lot. After hearing of this I sent word to the man that he had done a foolish thing, as he might certainly have made a good profit by them. I saw him only the other day, and he was even then still lamenting his precipitation.—J. JAGER; 180, Kensington Park Road, W., May 22, 1886.

HYBERNATION OF DEIOPEIA PULCHELLA.—Has any one before made the observation as regards the hybernation of this insect? for besides the specimen noted last month (Entom. 127) by Mr. T. R. Sanders, as taken on May 25th, 1885, I can also record the capture of a specimen by myself on May 18th, 1878, at Bournemouth; and I particularly noticed at the time that it had a more faded appearance than those taken in the autumn.—J. M. ADYE; Somerford Grange, Christchurch, May 19, 1886.

[*Deiopeia pulchella* does not hybernate in the perfect state, but emerges from pupa in May. Specimens have previously been observed in England during May, and also in June, July, and August, though examples have been more frequently met with in this country in September and October. The species is probably not permanently established in Britain.—R. S.]

BOMBYX QUERCUS ON THE ISLAND OF HOY.—On referring to Mr. J. Jenner Weir's "Notes on the Lepidoptera of the Orkney Islands" (Entom. xv. 1), I am surprised to find that *Bombyx quercus* is not included among the list of captures on the Island of Hoy. It surely must have been overlooked. During the month of July last year, on the north end of that island, I found the larvæ of this species actually swarming on the heather; I

could very quickly have taken hundreds, had I felt so disposed. I am accustomed to take them very commonly here, but I never saw them so abundant as I did in Orkney. Our knowledge of the Lepidoptera of these northern isles apparently being so limited, I thought it might be interesting to add even so common a species as *B. quercus* to the entomological list of Hoy. —ARTHUR HORNE; 75, Rosemount Place, Aberdeen, N.B., May 6, 1886.

EMYDIA CRIBRUM IN DORSETSHIRE.—In the notes on Lepidoptera in Dorsetshire (Entom. 118), I notice *Emydia cribrum*, mentioned as “flying on the heath towards dusk.” As this is by no means a common insect, it may be of interest if I state that with a friend I took this insect freely last year on a Dorsetshire heath, but not towards dusk. All our specimens were captured in the heat of the day between 11 and 2, and we never once saw one later in the day.—JOHN LEA; 1, Claremont Terrace, Hampstead, May 20, 1886.

NYSSIA ZONARIA IN LANCASHIRE.—I have captured this year many specimens of *N. zonaria* on an old pasture at Crossens, near Southport. The larvæ (in this district) feed on knapweed (*Centaurea nigra*), not on yarrow, as stated in many works.—RICHARD COBY; Town Hall, Southport, May, 1886.

TEPHROSIA CREPUSCULARIA, *Hb.*, AND *T. BIUNDULARIA*, *Bork.* —In his notes on these species (Entom. 98), Mr. Tutt has very carefully followed the times of emergence of each in a state of nature, and to some extent bases his argument upon them; but, in addition to this, a glance at their behaviour in confinement may not be without interest, and will, I think, perhaps assist in reconciling the very opposite views held by some entomologists as to the possibility of distinguishing the one from the other by the markings and coloration of the imagines. *Tephrosia crepuscularia* is the earlier of the two to emerge in the spring, and ova are usually deposited by the end of March or the beginning of April. The larvæ feed up rapidly, and pupate by the end of May; a portion of these emerge during the following month, and form the summer brood, which is, as a rule, comparatively small, both in point of numbers as well as size; but the remainder lie over as pupæ until the following spring, before assuming the imago state. These are then among the first to appear, and are

generally of the warm brownish grey shade that Mr. Tutt describes; sometimes distinctly banded. I quite agree with him that these may be readily separated from *T. biundularia*; but the offspring of the summer brood, which emerge at about the same time as these, appear to me to come very much closer to *T. biundularia* in general appearance; and although the lines are, as Mr. Tutt suggests, perhaps not quite so sharply defined as in that species and somewhat darker in shade, the similarity is so great, even in bred specimens, that this character could hardly be relied upon, much less so in examples that had flown. The ova of *T. biundularia* are deposited from the middle to the end of May; the larvæ are not full-fed until the end of July, when they descend to the surface of the earth, and remain in pupæ until the following May, thus giving only one brood in the year. Unfortunately I have no notes of the markings of the larvæ of either species, but, as far as I remember, there is no great difference between them in this respect; but it may be worthy of mention that whereas *T. biundularia* fed readily on birch, *T. crepuscularia* would eat it only when reduced to the last extremity, and then very sparingly, and showed a decided preference to wild plum over all other foods offered to them. Whether our two species under discussion are of common origin—surrounding circumstances having induced an intermediate brood which became perpetuated, or, as would appear more probable from the comparatively restricted range of distribution of *T. biundularia*, local influences prevented, and in course of time altogether extinguished, the summer emergence—is a question upon which it is unnecessary to enter here; and, be that as it may, I see no reason at the present time for considering *Tephrosia crepuscularia* and *T. biundularia* other than distinct species.—R. ADKIN; Lewisham, S.E., May, 1886.

TEPHROSIA CREPUSCULARIA AND T. BIUNDULARIA. — I quite agree with the Rev. G. A. Smallwood (Entom. 39), that until more light is thrown upon the subject *T. crepuscularia* and *T. biundularia* cannot be definitely distinguished. I was told some years ago, by an entomologist of some authority, that we did not take *T. crepuscularia* in this locality, as it was a southern insect. Yet the concluding remarks of Mr. South (Entom. 101), point to the fact that both species usually occur in the same localities. Mr. Tutt gives March and April as southern dates for the appearance

of *T. crepuscularia*, and May and part of June for *T. biundularia*, the March and April imagos producing a second brood in July in the south (which is, I think, not an unusual thing with many early species). We have no second brood here that I am aware of, and if we take the standard works on Entomology, viz., Newman's, Stainton's, &c., we know that they have been written with a southern experience of dates of emergence. As a rule, we generally reckon here for the first four or five months at the beginning of the year a month later for our appearances and work, and as we take our specimens of *T. biundularia* in early May (2nd), it will coincide with Mr. Tutt's April appearance. Again Mr. Tutt says *T. crepuscularia* may be distinguished "by its warm brown-grey markings, and *T. biundularia* by its black lines being more sharply marked," yet (Entom. vi. 127) we have a record of a black *T. crepuscularia* taken 27th April, 1872, in Staffordshire. He adds that he has some beautiful varieties of *T. biundularia* from this neighbourhood and Derby." Now I do not think Mr Tutt's a fair test, because when one takes an insect commonly one usually sends a friend the pick of the lot. One would not think of sending him, say the pale brown or very indistinctly marked specimens, but good, clear, well-defined marked ones. What one wants to look at is a number of all shades, such as we take here, varying from brown, pale and indistinctly marked, and well-defined and sharply and clearly marked, to grey and suffused ones, nearly black, without markings; then we have a better guide. It is not fair to pick them out and call the brown-grey marked ones *T. crepuscularia* and the black lined ones *T. biundularia*. I have taken the second brood of this species in the New Forest in July—smaller, of course—and had specimens sent from the south, but still I fail to separate them, or see any perceptible difference from my own, and my series is not divided even now. To attempt to separate them by the figures in 'Newman's Moths' is a hopeless and difficult task. I got so mixed up with them that I finally give it up as a bad job. Perhaps Mr. Smallwood, like myself, does not possess that keen perception of these minute warm shades that other entomologists do; hence our difficulty. I think the best way to settle the difference would be for some of our able specialists in describing larvæ to have both northern *T. biundularia* and southern *T. crepuscularia* larvæ to rear and

describe. I find (Entom. 1873, vi. 386) a description given of two larvæ of southern *T. biundularia* by my friend Mr. Porritt, but nothing about *T. crepuscularia*. Perhaps some of our older entomologists will also give us a little of their experience, so that we may be able more readily to determine these confusing species with something like clearness, and in future to set some of our minds at rest.—JOHN HARRISON; 7, Gawber Road, Barnsley, May 13th, 1886.

TEPHROSIA CREPUSCULARIA AND *T. BIUNDULARIA*.—I should be glad if the casual remark of mine, referred to by Mr. Tutt, in his interesting paper last month (Entom. 98), leads to a full investigation of the question of these species. I have bred both insects, and made many enquiries from other entomologists, but so far I cannot find any clear and satisfactory characters by which they can be distinguished in the larval or perfect states. I have sought in vain for help from the books of Newman, Stainton, and others; and I should now like to quote such authorities as Hellins and Doubleday, to show how entirely this question remains open. On my consulting him about *T. crepuscularia* and *T. biundularia*, Mr. Hellins wrote to me as follows:—"Aug. 1st, 1884. I send some extracts from Doubleday to me, from which you will see that he could not separate the larvæ." The extracts from Mr. Doubleday's letters to Mr. Hellins are as follows:—"June 18th, 1859. I have got eggs of the pale *Tephrosia*, which have just hatched. Hope to settle the question between *biundularia* and *crepuscularia*. I believe they are distinct." "July 11th, 1859. Got a lot of larvæ of the pale *Tephrosia* (*biundularia*), but I cannot see any real difference between them and those of the darker one. Both vary a good deal, but I believe the species are distinct." "Sept. 7th, 1861. *T. lariciaria* of the old lists were the dark species, which appears earlier in the spring than the light one. *Crepuscularia* has a second brood . . . Some specimens of summer brood of *crepuscularia* very closely approach spring ones of *biundularia*." "Sept. 12th, 1861. After being bred in confinement for a year or two, all insects degenerate; and I have lately bred some very light specimens of *crepuscularia*, but feel convinced the species is distinct from *biundularia*." "Oct. 20th, 1861. The dark *Tephrosia* is far more difficult to procure than the pale one,

being very local in this country. It used to be abundant at Birchwood. I have never seen it from North of England, but it is plentiful in Scotland. *Biundularia* appears to be common throughout England; and near Manchester assumes a smoky appearance, and is sometimes very dark, but not at all like true *crepuscularia*." Mr. Doubleday writes again:—"Feb. 5th, 1863. There is still a mystery about them. I am firmly of opinion we have two species in Britain. Here (Epping) we have nothing but *biundularia*; they never have the ferruginous tint of *crepuscularia*. About Warrington *biundularia* occurs; but they get a dark smoky variety, totally unlike the Scotch *crepuscularia*. In the New Forest, Birchwood, &c., both species occur; but *crepuscularia* is always out three weeks or a month before *biundularia*." "Feb. 23rd, 1863. I have always considered the peculiar rusty freckling as one of the most striking characteristics of *crepuscularia*, which seems to be a very local species in this country." As Mr. Hellins says, in reply to a letter of mine reviewing the above extracts, "The *Tephrosia* question is evidently full of puzzles." I will only add at present that, although I can see a difference between the double-brooded (*crepuscularia*) and the single-brooded (*biundularia*), it is not at all the same difference as Doubleday found between "the pale" and "the dark" *Tephrosia*. I should say that *crepuscularia* is smaller, and has the second line followed by a more decided band of brown, while *biundularia* has blacker and more continuous lines, especially on the under side and on the hind wing. I should also say that the larva of *crepuscularia* is paler, almost putty-coloured, with yellowish spots on the claspers, while *biundularia* is redder and darker, with white spots on the claspers. But we want more definite differences than these; and they will, I think, be found in the egg state, if at all. I should be much obliged to Mr. Tutt, or any other entomologist, if he will send me eggs of the March and July *Tephrosia*, especially the latter.—G. A. SMALLWOOD; Willington, Burton-on-Trent, May 15, 1886.

WHAT IS CRAMBUS CONTAMINELLUS, *Hübner*?—So much labour has been expended the past four months on this insect that I will not weary the readers of the 'Entomologist' with speculative matter, but simply place before them the following very interesting and conclusive extract of a letter from Mr. W. H. B. Fletcher, of Worthing, written to me last month:—

"I have both Hübner (Zeller's copy) and Herrich-Schäffer. After careful study of the figures, I have come to a decision very different from Mr. Tutt. According to Staudinger, Hübner figures '*contaminellus*' three times:—fig. 59, as *contaminella*; fig. 364, as *immistella*; and fig. 442, as *inquinatella*. Now fig. 59 is a very good one of Mr. Tutt's species, male. Fig. 364, Zeller considers to be *angulatella*, Dup., = our *geniculeus*; to my eyes it looks like a var. *hortuellus*; I think we may dismiss the fig. from consideration. Fig. 442 is a very good one of the pale form of our Sussex *contaminellus*, female; but it cannot retain the name of *inquinatella*, as the species, so called, was earlier named thus by Schiffermüller, and figured (54) under that name by Hübner himself; Herrich-Schäffer's figures, 88 and 89, are our Sussex species, male and female. It results that Mr. Tutt's species retains the name of *contaminellus*, Hüb.; *inquinatellus*, Schiff., keeps its name; and Sussex (and Preston) *contaminellus*, Hüb., fig. 442, H.-S., 88 and 89, male and female, wants a name." The above extract so fully confirms my short paper last month, that I believe it effectually decides the question.—W. H. TUGWELL; 6, Lewisham Road, Greenwich.

EASTER-WEEK IN THE NEW FOREST.—Having for many years visited the New Forest later in the season, I was desirous of spending, this year, a week at Brockenhurst in the spring. On my arrival, April 24th, the weather was lovely; *Gonopteryx rhamni*, *Vanessa polychloros*, and *V. io* were to be seen frequently. In the Queen's Bower, on April 26th, I saw *Lycæna argiolus* in large numbers round the hollies and oaks; but as the former are very high there, it was difficult to obtain them, and I had to watch my opportunity when they flew from tree to tree, generally within reach. Only on one occasion, at Netley Abbey, on the ivy, in August, 1880, have I seen *L. argiolus* so plentiful. In the evening I repaired to the sloe bushes, near Brockenhurst Bridge, where I took a few *Aleucis pictaria*, which were just emerging; a series of *Eupithecia pumilata*, *Ligdia adustata*, *Anticlea badiata*, and *A. nigrofasciaria* (*derivata*); also some fine *Selenia illunaria*. Of Noctuæ only *Teniocampa gothica* and *Pachnobia rubricosa*. Micros, *Depressaria yeatesiella*, *D. ciliella*, and *Sarothripus undulatus* (*revayana*); but that was my only chance, for in the night we had a terrific storm, and the next day my hunting-ground was transformed into a lake; it likewise turned very cold,

with east wind. Wading through the wet forest to a place called Butt's Lawn, I took six *Boarmia cinctaria* on the isolated trees among the heath; also *Eupithecia abbreviata*, sitting in company with several *Diurnea fagella*. *Eupithecia irriguata*, I regret to say, was not to be obtained, as the strong wind carried everything a long way after tapping the boughs. Occasionally a hibernated *Cidaria siderata* (*psitticata*) flew off, which could be more easily pursued than a *Eupithecia*. Although at the end of the week we had one or two more sunny days, not another *L. argiolus* was visible, where I had taken them before. I tried a night's sweeping on the famous heath at Hincheslea, without any success. As I was leaving *Ematurga atomaria* was just appearing, and I regretted I could not enjoy another morning's ramble across the beautiful heath between Queen's Bower and Brockenhurst.—J. JAGER; 180, Kensington Park Road, W., May 22, 1886.

REARING LARVÆ. —As the season has fully come, it may possibly be a help to some of your readers to hear of a method for larvæ rearing which I have employed for the last three years with very marked success. It may or it may not be new, but I have not yet met with it elsewhere, either in books or practice. My plan is simple and inexpensive. My materials consist of a number of bell-glasses, varying in diameter from 4 to 12 inches across the mouth; a large number of little glasses obtained from a chemist from 2 to 2½ inches long; a number of jam pots equal to the number of bell-glasses; some pieces of gauze or muslin to cover the mouths of the bell-glasses, and some fine earth baked to free it from all enemies to larvæ. The method is as follows:—When I get some larvæ I take a bell-glass, in size according to the number and size of the larvæ, and place it, mouth upwards, in a jam pot. I then put in some of the earth up to about an inch or inch and half in depth. If it is a small-sized glass I then put in one small bottle, pressing it down into the earth in the middle as far as it will go, and fill it with water. If a large glass is needed for a number of larvæ, or for several large ones, I put in two, three, or four little bottles. Into the bottle or bottles are then put some twigs or sprays of the food-plant, and the "rearing cage" is ready for the larvæ. Having tied down the gauze over the mouth of the glass, I place it on a table before a window, which is kept open a little when the weather permits. I

do not write this with the idea of presenting anything very original to the entomological world, but with the hope of helping the "younger hands" in this interesting branch of the science. My system (if I may call it one) has these advantages:—It is inexpensive (a sovereign can purchase sufficient materials to rear several hundred larvæ at one time, and with care they will last for years. The large open mouth of the bell-glass gives fresh air perpetually, and keeps the larvæ healthy and dry. The small water-bottles keep the food-plant fresh for days, and saves much trouble in changing it. The earth, being dry, receives and absorbs the excrement of the larvæ, thus preventing mould and unwholesome dirt accumulating; it is also then ready for those larvæ which pupate under ground, when they are full-fed. Besides the bell-glasses have this great advantage, they enable us to watch the habits of the various larvæ, and to gain an intimate knowledge of their economy. In fact, I have learnt more in this way than by reading ever so many of the published entomological works. In conclusion I may add that since I have reared larvæ in this way I have been successful beyond expectation, losing but a very small percentage while in the larva state. I always keep the different species in separate glasses, but have had as many as 150 in one large glass feeding at the same time, such as *Eriogaster lanestris* and *Melitæa aurinia*.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, May 19, 1886.

[Mr. Seymour St. John makes some excellent suggestions in his above remarks. We may, however, add that if he had his water bottles standing in tin cylinders into which they would loosely drop, he could withdraw the bottles for refilling with water and food without disturbing the earth in which his pupæ are forming. The necks of the bottles should be plugged with blotting-paper round the food-plant stalk, otherwise it gives the larvæ opportunity for committing suicide by drowning, a tendency to which is very fully developed in some species. The neck of the bottle should be packed round up to the cylinder edge, also with paper, so as to allow the larvæ to easily regain the food-plant in case they fall therefrom. One to one and a half inches does not appear quite deep enough for the earth, but in this we suppose Mr. St. John is guided by circumstances. —J. T. C.]

EUROPEAN LEPIDOPTERA. — Mr. Alfred Jahn, Attorney, Rudolstadt, Germany, writes:— “Every year I breed various species of Lepidoptera of Germany and Dalmatia, and should be glad if you can induce any of your readers to communicate with me, with a view to my exchanging eggs, caterpillars, chrysalids, or imagines with them.” This we with pleasure insert, as another stepping-stone on the way to breaking down insular prejudice among British collectors of insects.—JOHN T. CARRINGTON; May, 1886.

APHILOTHRIX RADICIS, *Fab.*—I had the pleasure of taking several walks with my friend Mr. C. G. Barrett during his short stay in Plymouth in 1884, and on three occasions we found *Aphilothrix radicis* galls. The first time was at Radford on the 13th May, when on passing a grand old oak Mr. Barrett drew my attention to a swelling of the bark about three feet from the ground; the gall evidently was in a state of growth. I marked the spot, in my mind, with the intention of removing the galls. In September I duly visited the tree for that purpose, but was very disappointed to find, after a four miles' walk, that a woodpecker had forestalled me. On the 20th May we visited Mount Edgcumbe Park, and in our route to join my wife and children at the keeper's cottage, near Picklecombe Fort, near which cottage Mr. Barrett observed another tree with two galls on it; these were between four and five feet from the ground. Again, on the 2nd June, in passing through the Walkham valley, we saw three or four galls on one fine old tree; these were over six feet from the ground. Knowing I should not walk so far again that season I removed them, and bred the gall-maker in April following. It appears by this that *A. radicis* requires one year to mature; this being the agamous form of *Andricus noduli* (= *trilineatus*), it would require two years to complete the cycle.—G. C. BIGNELL; Stonehouse, Plymouth, February 5, 1886.

SYNERGUS INCRASSATUS, *Hart.*—These inquilines I bred in April and May from galls of *Aphilothrix radicis*, taken on the 2nd June previously.—G. C. BIGNELL; Plymouth.

TORYMUS ERUCARUM, *Sch.*—This very handsome parasite I bred from the galls of *Aphilothrix radicis*, but cannot say whether they were parasites on the gall-makers or on the lodgers, *Synergus incrassatus*.—G. C. BIGNELL; Plymouth,

NEW WORK ON COLEOPTERA.—Entomologists will be glad to learn that the Rev. W. W. Fowler has placed in the hands of his publishers (L. Reeve & Co., London) the first portion of the MS. of his new work on the British Coleoptera. A large paper edition with coloured plates is also proposed, if adequate support can be obtained to justify the large outlay that must necessarily be incurred for artistic work. On enquiry, we find that already a sufficient number of subscribers for the illustrated edition, which will be limited to 250 copies, have sent in their names to make its appearance almost assured. In this work Mr. Fowler will have the assistance, as referees, of Dr. Power, Dr. Sharp, Dr. Mason, and Mr. Champion, so that this must surely be the coming standard work on British beetles; providing the drawing and reproduction of the figures are placed in experienced hands, and not spoiled by false economy.—[J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *May 5th*, 1886.—Prof. J. O. Westwood, M.A., F.L.S., Hon. Life-President, in the chair. Mr. William Saunders, the President of the Entomological Society of Ontario, was present as a visitor. The following were elected Fellows of the Society, *viz.*:—The Rev. E. N. Bloomfield, M.A., Mr. Frederick Fitch, Mr. A. J. Rose, and Mr. William E. Nicholson. Mr. Jenner Weir exhibited a large and spiny lepidopterous larva which he had received some years ago from the late Andrew Swanzy, who obtained it in Western Africa. Mr. Stevens exhibited a number of Coleoptera recently obtained in the Isle of Wight, including *Apion sorbi*. Mr. Crowley exhibited four specimens of *Leto venus*, a large moth belonging to the family *Hepialidæ*, from Natal. Mr. Howard Vaughan exhibited a long series of *Cidaria immanata* from Kent, Surrey, and other southern counties, Perthshire, Isle of Man, Isle of Arran, the Orkneys, and Shetlands. He also exhibited *C. russata* from various localities in the South of England, and from Perthshire, Argyllshire, and the Islands of Arran, Lewis, and Hoy. Mr. Vaughan further exhibited varieties of *C. suffumata* from Dover and Darlington. Prof. Westwood commented on the interesting nature of the exhibition of *C.*

immanata, and stated that he had never before seen such a wonderful collection of varieties of a single species. Mr. McLachlan exhibited, for Mr. G. Lewis, living specimens of *Paussus favieri* (Fairm.), lately collected in Portugal by Mr. Lewis. The Rev. W. W. Fowler exhibited *Staphylinus latebricola* and *Quedius truncicola*, both from the New Forest. The Secretary exhibited, for Mons. H. de la Cuisine, of Dijon, coloured drawings, life-size, of a variety of *Urania cræsus*, and a variety of *Papilio memnon*; and Prof. Westwood made some observations on them. Mr. G. Elisha exhibited specimens of *Antispila pfeifferella*, together with the cases, and the leaves mined by the larvæ. Mr. J. W. Slater read a paper "On the Origin of Colours in Insects," in which he showed that the assertions of Mr. Grant Allen, that all brightly-coloured insects were flower-haunting species, were incorrect; and that many brilliantly coloured insects were carnivorous. Mr. McLachlan said that the physiological question in connection with colour had not been paid attention to; he thought that colour in insects was to a great extent dependent upon the circulation of fluids in their wings. The discussion was continued by Prof. Westwood, Mr. Goss, The Rev. W. W. Fowler, Mr. Jacoby, and Mr. Weir.—HERBERT GOSS, Secretary.

SOUTH LONDON SOCIETY'S EXCURSIONS.—The first list of this Society's summer excursions is issued. They consist of five, and are:—May 29th, to Horsley, conducted by Mr. Windybank, leaving Waterloo Station at 2.32 p.m.; June 26th, to Bookham, conducted by Mr. Step, from Waterloo at 2.55; July 17th, Westerham, conducted by Mr. Carrington, from Charing Cross at 2.15; August 7th, Chobham (Virginia Water Station), conducted by Mr. Billups, leaving Waterloo at 3 p.m.; and September 4th, to Epsom, conducted by Mr. Chaney, leaving London Bridge at 2.18 p.m. These excursions are usually most instructive to those unacquainted with the various localities visited, and others than members may attend, as visitors, on introduction by a member. London or country readers who have not yet joined this Society should obtain particulars from the Secretaries, 1, Denman Street, London Bridge, S.E.—[J. T. C.]

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IS *DEIOPEIA PULCHELLA* PERMANENTLY ESTABLISHED IN BRITAIN?

BY REGINALD E. SALWEY.

HAVING been so fortunate as to take a fine specimen of the beautiful and rare *Deiopeia pulchella* on the 1st June this year in a meadow about $3\frac{1}{2}$ miles inland from Folkestone, in the presence of Messrs. F. L. Whitmore and W. Austen, I was about to record my capture in the 'Entomologist,' when my attention was drawn to a note by Mr. R. South (Entom. 157). He answers a query of Mr. J. M. Adye's with reference to the hybernation of *Deiopeia pulchella*, and adds that the species is probably not permanently established in Britain. I have never faced this theory before, and having so recently captured a specimen I am naturally anxious to have good grounds for retaining my old belief, that *D. pulchella*, although rare, has a real claim to a permanent place in our British list. To establish this claim is, unfortunately, out of my power, but to find some foundation for it is my present purpose.

In the first place, I know of no rarity amongst our Lepidoptera—perhaps excepting *Vanessa antiopa*—whose appearances, though erratic, have been so continuous throughout a period of many years. The back volumes of the 'Entomologist' prove this sufficiently, and I am personally aware of some specimens taken which have never been recorded; and doubtless there are many other instances. In some years the number recorded of specimens captured is quite considerable; at other times the record sinks to two, or only one, but that it is fairly continuous will, I hope, be admitted.

There is a popular belief, which has, rightly or wrongly, gained ground of late, that most rarities are blown across or accidentally conveyed to our shores from the Continent. I do not dispute the possibility of *Deiopeia pulchella* paying us a visit by the latter means; indeed, considering the quantity of fruit and flowers imported to England, it is a matter for wonder that we do not more often see continental species on our coasts; but to any one acquainted with the weak and uncertain flight of this moth, it must be obvious that a journey of thirty miles on the wing, even backed by a favouring wind, is a physical impossibility. Even allowing that a percentage of our known specimens are conveyed to England—and naturally we S.E. coast Entomologists have to bear the brunt of this doubt especially—we cannot account by similar reasoning for those taken on the Cornish, Devonshire, Suffolk, Lincolnshire, and Yorkshire coasts. Is it not probable that *D. pulchella* is a lover of any sea coast? and its food-plant (*Myosotis arvensis*) being universal, would not interfere with this supposition.

The late Mr. Sidebotham, writing to Mr. Tugwell (Entom. xi., 186), intimates that this species prefers the coast at Mentone, where, he says, "it is more abundant." Mr. Tugwell then confirms its partiality for the seaside in our own country, and I find (Entom. xiv., 157) a record of the capture of a specimen by Mr. C. B. Ussher, at Ardmore, Co. Waterford coast, Ireland. It is not my wish or intention to deny that by far the greater number of captures have been effected on our sea coasts, but it is my firm belief that this is a matter of habit and natural selection on the part of *D. pulchella*; and I am of opinion that the species is established and breeds in England, taking a coast line by preference.

My own specimen was taken, as previously stated, nearly four miles from the sea, but I find that on Oct. 1st, 1869, Mr. T. H. Briggs took one on a farm in the Alkham Valley whilst out shooting, within three-quarters of a mile of my locality (Entom. iv., 352), and on Oct. 28th, 1874, Mr. C. A. Briggs, his brother, took another on the same farm, and within a similar distance of my own capture. During the last twenty years many other specimens have been taken on our S.E. coast and around Folkestone and Dover; and may we not reasonably suppose that the Alkham Valley, and entire surrounding

district, inclusive of the above-named places, is a recognized locality for my prize, and that it has bred hereabouts from year to year without any continental influx of new blood? The food-plant is present in the field where my specimen got up, and Mr. T. H. Briggs's *D. pulchella* actually settled on a bank where *Myosotis* was growing.

Here are a few localities extracted from the 'Entomologist' which prove that this strange insect has sometimes sought a home well inland. The following "takes" are recorded:-- Entom. iv. 352, at Usk, Monmouthshire; Entom. v. 80, near Reading; same vol., p. 412, Ipswich; Entom. viii. 226, at Biggleswaite, Bedfordshire; and p. 280, at Waltham Cross. I am also informed that Mr. J. T. Carrington and the late Mr. Prest, while out walking together, in the autumn of 1871, through a corn stubble field, near Acomb, Yorkshire, saw a specimen, but, having no nets, failed to secure it. There is an argument in favour of inland localities which may possibly have been overlooked. Say that a collector takes a *D. pulchella* on this or any other coast. In all probability he will not abandon the quest, but will follow the coast line with more or less fidelity in search of another specimen; this has certainly proved successful in past years. He rightly feels a certain confidence in persevering, and that the chances are in his favour. He is bounded by the sea on one side, and probably stimulated by the similar nature of the coast line before and behind him; but a collector at Repton or Biggleswaite has no such stimulus; all points of the compass are open to him, the magnitude of the task appears to be heightened, the prospect of success apparently diminished, and he abandons what he considers to be a hopeless undertaking. I am inclined to think that his further search would be nearly, if not entirely, as profitable as that of a dweller on the coast, and that a diligent walk over adjacent meadows and lanes, and the use of the cord swept across arable fields in the recognized way, would yield a good measure of success.

In conclusion I venture to attribute three reasons for the continued rarity of *Deiopeia pulchella*. First, the sluggish nature of the insect, which often will not take flight unless absolutely kicked up. Secondly, its apparent love of solitude in this country; in this way contrasting curiously with the allied species *Euchelia jacobaea*, whose habits are entirely

gregarious. Thirdly, the nature of the food-plant, which, though common, is generally scattered over a wide area, and not easily swept or searched for the larva.

I live in hopes that entomologists will sacrifice a little time, now devoted to general entomology, during the months of May and October, to diligent working for the imagines of this beautiful species, and that a record of further captures will be forthcoming this autumn. May everything be done that is possible, in the future, to banish the last vestige of suspicion that *Deiopeia pulchella* is not a well-established British species!

1, Bouverie Place, Folkestone, June, 1866.

A CONTRIBUTION TO THE LIFE HISTORY OF *CHRYSOPHANUS SALUSTIUS*.

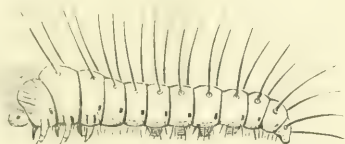
By G. V. HUDSON.

THIS is the commonest and most generally distributed of our butterflies, occurring everywhere throughout the islands, from November till April. It is consequently somewhat surprising that its transformations have not yet been observed, but this is, no doubt, owing to the great difficulty experienced in procuring ova. For upwards of three years I have been in the habit of enclosing specimens in a large caterpillar cage, and feeding them, in hopes that they would deposit eggs, but have invariably failed until last summer, when I obtained some quite unexpectedly. While collecting on the coast near here on February 7th I captured a worn female of this insect, which I intended keeping for eggs; on the way home the box got accidentally misplaced, and was not opened till several days later, when I was delighted to find that the butterfly had laid nineteen ova before dying.

These were semiglobose in shape, and very small, their greatest diameter being less than one-eighth of a line.

When first deposited they are of a light green colour, ornamented with a number of pale yellow reticulations, the surface thus resembling honeycomb when sufficiently magnified. In ten or twelve days' time the eggs hatched, having previously assumed a uniform dull yellow tint, the head of the embryo

being also plainly visible as a small black spot near the apex ; at this point a circular hole is afterwards drilled in the shell, through which the enclosed larva finally makes its escape. These larvæ are very minute, at first measuring barely half a line in length, and their thickness does not exceed that of the finest cotton. A careful microscopic drawing was at once made of the caterpillar, and is here given ; and the following peculiarities were noted.



YOUNG LARVA OF CHRYSOPHANUS SALUSTIUS.

The head is very small, of a dull brown colour, almost hidden above by the thoracic segments, which are considerably swollen, the rest gradually tapering off towards the anus, where they become slightly attenuated. The general colour of the larva is pale green, darker on the dorsal surface, where a pair of conspicuous black warts are situated, a long erect bristle standing up from each of these, and a number of smaller ones also taking their rise from the ventral and anterior portions of the insect.

I was, of course, quite ignorant as to the food-plant of *Chrysophanus salustius*, but dock and sorrel naturally suggested themselves as the most likely from the two allied British species (*Polyommatus dispar* and *P. phlæas*) feeding on these ; I accordingly tried the former plant, and was delighted, while watching one of the larvæ under the microscope, to see a dark green spot rapidly forming inside it, and, on removing the insect shortly afterwards I observed a minute circular hole eaten out of the parenchyma of the leaf. For about a week they progressed very well, only two deaths occurring during this period ; it was now evident that the first moult was taking place, as all feeding had ceased, and the larvæ assumed a very sickly appearance. Five died during the change, and one was accidentally killed, the number being thus reduced to eleven. I should here mention that the exuviae are not eaten by the larvæ after moulting. Circumstances compelling me to leave home at this time, it was

necessary to take them with me, one unfortunately escaping during the journey, but the rest underwent their second moult quite successfully. After this, growth proceeded very slowly, and it was not until about three weeks later that there was the least indication of change, four larvæ having died meantime without any apparent cause. The six remaining then sickened for the third moult, which they were all unable to perform, each one gradually drying up, although fresh leaves were constantly supplied. During the second stage the larva is considerably stouter than at first, a bright crimson dorsal line also appearing immediately after the first moult, at which time the anterior segments are much less swollen, and the bristles smaller in proportion.

I think that my failure in rearing these insects must be attributed chiefly to an error in the food-plant, as during the whole time I kept them they appeared to progress very slowly, and, although eating pretty well for such small caterpillars, increased but little in size, as though their food did not nourish them properly. The following table of dates indicates, I think, an unusually slow development for larvæ, almost in the hottest period of the year. Larvæ emerged February 19th to 21st. First moult, March 2nd to 6th. Second moult, March 19th to 22nd. Larvæ died, April 14th to 16th. Should I again be successful in procuring ova, I trust that by trying other plants I may be able to rear the insect right through, but it is impossible to decide on the original food of *Chrysophanus salustius*, as all the docks and sorrels have unquestionably been introduced with the grass-seed, and consequently spread throughout the country.

Oriental Bay, Wellington, New Zealand, April 24, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS BRASSICÆ IN THE MIDLANDS.—For many years this butterfly has not appeared in greater abundance than it has during the last two—1884 and 1885. For several years past it has been gradually on the decline in point of numbers, and entomologists were becoming seriously afraid lest it should

become entirely extirpated. Great was their surprise, however, at the immense quantities of this insect which suddenly made their appearance in the autumn of 1884. Our gardens completely swarmed with them, and all kinds of vegetables were consumed indiscriminately by the multitude of caterpillars which were soon produced. The market gardeners were sorely distressed to know how to grapple with the foe, and numerous complaints found themselves from time to time in the local newspapers. As September began to draw to a close, so did the butterflies show signs of getting over, and when the 1st of October arrived nothing more was to be seen of them; but they left plenty of caterpillars behind them to commemorate their visitation. The larvæ were mostly all full-fed by the middle of October, and commenced at once to pupate under the projections of walls, palings, &c. At least half of them proved to be attacked by that deadly parasite *Microgaster glomeratus*, the golden cocoons of which appeared in the utmost profusion over walls and fences. The average number of parasites that attacked each individual victim was between forty and fifty. Numbers of caterpillars lived on through October, and many were not full-fed until somewhat near the middle of November. Such as these had either been hatched late or were sickly. The majority of these which had not sprung up by the end of October perished on account of the frosts which set in with vigour about that time. Notwithstanding all these enemies, the number of pupæ which survived was enormous. I counted on a wall not exceeding a dozen yards in length at least fifty or sixty of them. As I fully anticipated, the imagoes appeared the next spring in proportionate abundance, and continued so throughout the summer. It remains yet to be seen whether the insect will be as numerous during the ensuing summer or otherwise. What was the cause of such a sudden appearance of this butterfly in such vast numbers, without having previously given any warning? Could it be through migration, or the cause of some hitherto unknown agent in facilitating its rapid multiplication? The weather in both the years 1884 and 1885 was comparatively favourable for its developement, particularly so in the latter, which was unusually dry and warm. I am inclined to think that it is greatly regulated by both weather and parasite. It will be interesting to discover in what way the parasites themselves are affected by the weather. I should be

glad to learn if the unusual abundance of this butterfly in the years 1884 and 1885 was noticed by any readers of the 'Entomologist' in other districts, and what cause they attribute to such a phenomenal appearance.—W. HARCOURT BATH; Birmingham, February 15, 1886.

VARIETY OF *EPINEPHELE HYPERANTHES*.—Whilst collecting at Dorking, August bank holiday, 1885, I had the good fortune to secure a fine variety of this common butterfly. Instead of the upper surface being almost plain, there are three spots on each of the fore wings, very clearly defined; the two spots on both lower wings are as distinctly marked as on the under side of an ordinary specimen, each spot having a white pupil, then black, and finally circled by a very clearly marked amber-coloured ring, whilst on the under side all the spots are larger, brighter, and more clearly defined. The specimen is a female of large size.—ARTHUR J. ROSE; 11, Kyverdale Road, Stoke Newington, N., February 17, 1886. [Varieties of this species are mentioned at Entom. v. 201, 212, 226 (1870); and vi. 416 (1873).—ED.]

REMARKABLE VARIETY OF *LYCÆNA BELLARGUS*.—I recently visited a locality in Kent for *Lycæna bellargus* (*adonis*) to see if the spring brood occurred there, and found them unusually abundant. I have paid four visits altogether with one of my boys, and we have taken some examples of a form of *Lycæna bellargus* quite new to me, and I should esteem it a favour if you would kindly drop me a line to say if you are acquainted with it, or if it is well known. The male is a beautiful pale lilac or French gray in colour. We have taken five or six of them, and, to my great surprise, have also met with females to correspond. These are a very pale brown or fawn colour, clouded with pale lilac, and have beautiful pale orange spots; one of these is a perfectly fresh specimen, so there can be no question of fading. We also took a specimen of the black form of the male. First male was taken on June 7th, the second on June 10th, and five more on June 15th, when we also took the black variety. On this latter day I netted and boxed two very light females, which I did not examine until setting them out the next day, when I discovered them to be the corresponding females to the light form of the male. We went again on the 17th, specially to look for females, and took four more; saw another male, but the wind took it away. All were taken within the space of a couple

of acres, and most of them in one particular portion of ground, a few yards in extent. Both sexes are distinguishable at a glance on the wing, being totally different in colour to *bellargus*, or any other blue in appearance when flying. The spring brood was quite as numerous as *corydon* later on; and I hope to visit the spot again in the autumn to see if there is a later brood of *Cellargus*, and if the same pale form is to be met with. I would only add that I was as much surprised as pleased to meet with these varieties, especially with such a number of them, both sexes having occurred. I should fancy they are worthy a name. —E. SABINE; 22, The Villas, Erith.

MELITÆA ATHALIA AND NEMEOBIUS LUCINA, LOCALITY.—Perhaps some of the contributors to the Entomologist would kindly afford any information they may possess accounting for the noted peculiarity of this butterfly to localise itself in a few favoured woods in the South of England, though its undoubted food-plant, discovered by Mr. Harwood of Colchester (*Melampyrum pratense*, is generally distributed in this country. I may here mention that an attempt was made by Mr. Harwood to establish a colony of *M. athalia* in a wood about fifteen miles from one of its haunts in Essex, where its food-plant abounded; but though the insect fairly established itself for a few seasons, from some cause or other, after changing its habitat from one clearing to another in the wood, it disappeared, and has not since been seen in that locality so far as I am aware. The cause of its disappearance may have been due to crowding out by the rapid growth of the underwood. My experience of *M. athalia*, and doubtless that of others, is that it thrives best in those open spaces in woods where the young birches are few and far between, and where the flora which usually springs up after a clearance is luxuriant. It is useless to search the denser portions of the wood, even though adjoining the metropolis. Stragglers, however, may be taken in the ridings of the wood. Indeed I heard of an extreme instance in which a few stragglers were taken in a field at least five miles from their head-quarters. *Nemeobius lucina* is another butterfly with a similar tendency to localize itself, though its food-plant (*Primula vulgaris*) is common in most woods. I see it recorded in several works that *N. lucina* is double-brooded, but I have never known or taken specimens of

the second brood.—GEORGE J. GRAPES; 2, Buckleigh Road, Streatham Common, June 23, 1886.

DIMINUTIVE DIURNI.—Whilst walking through Uckfield, on the 6th May, I captured a remarkably small specimen of *Euchloë cardamines*. It measured just over an inch from tip to tip of the wings, but was quite perfect, and apparently only just out. Is not this a very small specimen, as the average span of wings of this butterfly is about $1\frac{3}{4}$ inches? Morris mentions one caught at Bishop-Auckland, which measures an inch and a quarter, but the one in question is even smaller than that by over the eighth of an inch.—S. MORRIS; Stoneleigh, St. John's Park, Blackheath.

SEX OF WINTER-FLYING BUTTERFLIES.—It is well known to entomologists that of the species hibernating as imagines several are apt to show themselves on the wing on bright days from November to March, retiring again to their winter-quarters, unless snapped up by some hungry bird; an event not uncommon, I imagine. *Gonopteryx rhamni* is one of these, and frequently I see it through the winter season along the lanes of Kent, and now and then in the midst of a wood, but never remember observing a female insect. I shall be interested in knowing if the observations of others agree with mine. In the case of such species as *Vanessa urticae* it is not easy to ascertain the sex; but possibly it is only males that thus sally forth at an ungenial season.—J. R. S. CLIFFORD; Gravesend, Kent.

HETEROCERA IN HUNTINGDONSHIRE.—There are only a few resident entomologists in Huntingdonshire; therefore a list of specimens taken by me in 1885 may be useful. I should say it consists chiefly of captures in my own garden, which is about an acre in extent and planted with fruit trees. The number enumerated is not large, and includes only a few Noctuae. Most of the insects were taken after business hours, and when enjoying the pleasantness of a garden in summer:—

In April, *Anticlea badiata* and *A. nigrofasciata* (*derivata*) occurred at dusk. In May there were *Bombyx quercus* (males), *Selenia lunaria*, *Amphidasys betularia*, *Hemerophila abruptaria*, *Melanippe sociata* (*subtristata*), *Cilix glaucata* (*spinula*) common, *Dicranura vinula* (bred), *Phlogophora meticulosa*. June produced *Sphinx ligustri* at privet flowers and honeysuckle (also bred), *Cherocampa porcellus* and *C. elpenor* at honeysuckle pretty abundantly. *Hepialus lupulinus* and *H. humuli* in

grass, *Zygana filipendula* in meadows. *Spilosoma lubricipeda* and *S. menthastri* (twilight), *Lasiocampa quercifolia*, *Rumia luteolata* (cratægata) common, *Hemithea strigata* (thymiaria), *Acidalia aversata*, *Timandra amatoria* rather common, *Larentia viridaria* (pectinitaria), *Eupithecia linariata*, *Melanthia ocellata*, *Melanippe procellata*, *Scotosia vetulata*, *Cidaria dotata* commonly, *Phalera bucephala* (larvæ on filbert trees, imagines common), *Acronycta psi*, *Calamia phragmitidis* (brick hills), *Arylia putris*, *Agrotis segetum*, *Triphena pronuba* common, *Cucullia umbratica* at honeysuckle flowers, *Nenia typica*. In July, *Smerinthus ocellatus*, *S. populi*, and *S. tilie*, *Macroglossa stellatarum* at flowers during the day, *Sesia tipuliformis* common on currant bushes early in the morning, *Nota cucullatella*, *Lithosia luridiola* (complanula), *L. griseola* and *Gnophria quadra* (male and female), *Euchelia jacobæ*, *Arctia caia* (larvæ common in garden), *Porthesia auriflua*, *Bombyx neustria*, *Odonestis potatoria*, *Uropteryx sambucaria* common, *Epione apiciaria*, *Pericallia syringaria*, *Halia vauaria* (wauaria), *Abraeus grossulariata*, *Ligdia adustata*, *Lomaspilis marginata*, *Melanippe rivata* and *M. fluctuata*, *Campptogramma bilineata* everywhere, *Cidaria fulvita*, *Leucania impura*, *Xylophasia monoglypha* (polydon), *Mamestra brassicæ* and *M. persicariæ* at sugar, *Triphena interjecta* and *T. cones* (orbina), *Noctua plecta*, *Calymnia diffinis*, *Hecatera chrysozona* (dysodæ), *Plusia iota*, and *P. gamma*. In August I took *Cossus ligniperda* rather commonly, *Orgyia antiqua* in daytime, *Triphosa dubitata* and *Scotosia rhamnata*, *Leucania pallens*, *Nonagria lutea* (lamps), *Agrotis puta* (sugar and lamps), *Plusia chrysitis* and *P. festuæ*, *Amphipyra trypægonis* (sugar), *Mania maura* (old buildings). These occurred in September, *Chesias spartiata* (lamps), *Diloba ceruleocephala* very common at lamps, *Charæus graminis*, *Noctua c-nigrum* (sugar), *Gonoptera libatrix* and *Catocala nupta* (common at sugar). In October, *Acherontia atropos* commonly, *Cidaria miata*. And in November, *Pæcilocampa populi*.

Many of the above insects were taken in several months; I have not repeated their names but placed them in the month where they were most common.—HERBERT E. NORRIS, St. Ives, Hunts, June 4, 1886.

STRIDULATION OF SPHINX CONVULVULI.—A lady has just presented me with a very fine specimen of *S. convulvuli*, which, she tells me, she found at Groombridge at rest among ivy towards the end of September last. She remarked, that while killing the moth, which she did by placing it in a bottle with a few drops of chloroform, it uttered "loud squeaks," and "other distinct sounds, apparently of discomforture." I was not aware that *S.*

convoluti possessed the art of emitting any sound whatever.—W. H. BLABER; Beckworth, Lindfield, Sussex, May 13, 1886.

CALLIMORPHA JACOBÆE IN APRIL.—A fine fresh-looking specimen of *Callimorpha jacobææ* appeared here on Easter Sunday, April 25th. Is not this a very early appearance for this insect?—EDMUND GARRATT GARDNER; May 14, 1886.

DEIOPEIA PULCHELLA IN GUERNSEY.—I am happy in being able to record the capture of this beautiful moth on the 1st of June on the cliffs here. There is, I think, only one other reported capture, which was in 1878, and reported in the 'Entomologist.' Until I had netted my prize I believed I was in pursuit of *Anaitis plagiata*, which moth it rather resembled in its manner of flight. Fortunately *plagiata* is scarce here, and therefore I was persistent in my endeavour to catch the white-looking moth, which was apparently so much at the mercy of the stiff breeze then blowing. A mile further on and more inland I took a second specimen. I have worked the neighbourhood industriously several times since, but have seen no more. The specimens are in very good condition and quite fresh, but paler than some continental specimens that I have seen. We are very late here this year. *Melitæa cinxia* did not make its appearance until the 21st of June.—FRANK E. LOWE; St. Stephen's, Guernsey.

ACRONYCTA ALNI IN SOUTH STAFFORDSHIRE.—On Sunday evening, May 9th, I captured a specimen of *A. alni* which had been flying about in my sitting room. Save that the thorax was just a trifle rubbed, the insect was in capital condition. I picked up a caterpillar of this species a few yards from my house about two years ago, but have not previously taken the perfect insect.—W. STEVENS; Tettenhall, near Wolverhampton, June, 1886.

PLUSIA PULCHRINA.—Kirby, in his 'European Butterflies and Moths,' says, respecting this insect, "Very like *iota*, but the fore wings more varied and more purplish, the silvery markings more sharply defined, and *always separated*." The latter remark would appear to be incorrect, for I have a nice specimen—taken here in 1884, in which the silvery spots are quite confluent. Is this an uncommon variety?—W. STEVENS; Tettenhall, near Wolverhampton.

HADENA RECTILINEA.—An old collector of this neighbourhood tells me he used to take this insect near here in the greatest abundance. It seems to be now quite extinct in its old haunts, not a single specimen having been seen for several years. I should be glad to know if this has been the case elsewhere?—A. E. HALL; Norbury, Pitsmoor, Sheffield, June, 1886.

LOBOPHORA VIRETATA.—Can any of your readers favour us with the result of their observations upon this insect? It is spoken of in all the books as feeding on privet. In the Midlands we find it in woods where no privet whatever occurs, and almost invariably associated with the holly, almost all my own specimens being found sitting on the trunks of hollies. I have taken it this season in three different woods, in all of which the holly is one of the most abundant trees, while privet is entirely absent from the locality, and sycamore, another suggested food-plant, occurs very sparingly. I kept several females for eggs, hoping to solve the difficulty, and two other friends did the same; but in no case was a single egg produced.—CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, June 12, 1886.

TEPHROSIA CREPUSCULARIA AND T. BIUNDULARIA.—In defending the two species theory, Mr. Tutt and Mr. Adkin (Entom. 98, 158) seem to rely upon the slender evidence of a warm tint in *T. crepuscularia*. I am afraid even this will not hold good, for my own bred specimens of the double-brooded *T. crepuscularia* do not all possess that tint, but are some of them of a pure cold grey. On the contrary, *T. biundularia* (the single-brooded, May insect), which I have bred from eggs, have, many of them, a decided tinge of warm brown or rusty, other specimens varying from almost white to black, as black as *Tanagra atrata* (*chærophyllata*), with the subterminal line pure white. To attempt to separate such an extremely variable insect into two species, by the rule of some tint or shade, is, to say the least, an arbitrary proceeding. With as much reason it might be contended that the black *Amphidasys betularia* is a distinct species from the ordinary form of that moth. The distribution of these insects is an important point which has not yet been ascertained, as Newman admits ('British Moths,' p. 67), for the excellent reason that the species cannot be, and never have been, separated, with any authority. When Mr. South says (Entom.

101) that in England *T. biundularia* is generally found in the same localities as *T. crepuscularia*, does he mean that the records can be considered satisfactory, or to imply that the two insects are merely varieties? Again, when he says that *T. biundularia* is confined almost entirely to Germany and Britain, is not the answer obvious, that continental entomologists generally do not record it as a separate species? For it is strange indeed that an insect so widely distributed in Scotland and England should be so local in Europe. As for the difference in size, tint, and time of appearance, I believe it is entirely due to variation; and I have noticed that whole broods have often a common character of coloration. Some years ago I bred about twenty of the warm brown *T. biundularia* from eggs of one female, laid in the third week of May. And many instances might be named to show that moths, as they extend their range southward, undergo changes of colour and time of appearance, becoming in some cases double-brooded and smaller. Mr. Harrison's practical remarks (Entom. 159) strongly confirm my own opinion that the double-brooded *crepuscularia* is an exclusively southern insect, which point might be tested at once, as the moth comes out from the middle to the end of July. The view, therefore, that I take at present is that we have only one species, varying immensely in shade and colour, and that in the south, where the insect emerges so early as March, we have a degenerate second brood, or half-brood, in July, but that in the north it is uniformly single-brooded. In the south, the early brightly-coloured variety (*crepuscularia*) which gives birth to the second brood, has been held to be a distinct species, merely as an opinion, and without any foundation in fact, by Doubleday and some of his disciples. Referring to Doubleday's List (1873) I find three synonyms for *biundularia*. The first is "*biundularia*, Esp. (præc. var.)," the second, "*crepuscularia*, Haw (var. ver.)," and the third "*crepuscularia*, var. Gn." If I understand this aright, we have the overwhelming authority of Esper, Haworth, and Guenée, for saying that *T. crepuscularia* and *T. biundularia* are varieties only of one species, while Doubleday stands alone as the advocate of a second species. I should now like to recall attention to Doubleday's own words, which I quoted last month (Entom. 161), from which it appears that, though his opinion was in favour of two species, he could not support it by a single fact. I

conclude that, as no actual difference can be found in larva or imago, the two-species theory rests merely on tradition, and must be abandoned unless the eggs can be shown to be distinct. I should be much obliged for any that may be sent to me this month.—G. A. SMALLWOOD; Willington, Burton-on-Trent.

THE TEPHROSIA DISCUSSION.—It is satisfactory to find that my communication on *Tephrosia crepuscularia* and *T. biundularia* (Entom. 98) has called out such good matter as the notes of Mr. Doubleday, quoted by the Rev. G. A. Smallwood, and the experience of Mr. Adkin and others. There is certainly much similarity between the second brood of *T. crepuscularia* and the single-brooded *biundularia*, but the time of this second appearance aids us exceedingly in their determination. I think no one who has taken both species could possibly mistake the early brood. Of course I am speaking of typical specimens; the varieties must be judged by the date, season, and type occurring in the locality of capture. Mr. Harrison surely does not wish us to imagine that the time *T. biundularia* occurs in Yorkshire would be a month apart from the time of its appearance in Kent; that if an insect occurred in Kent say the first week of May, the first week in June would be a fair date for its appearance in Yorkshire. It does not seem reasonable. I can understand that the insects would be later in some seasons, while in others, with the temperature pretty well the same all over the country during the spring months, there would be but very little, if any, difference, and in seasons where *T. biundularia* has occurred in the south during the last fortnight of April, May 2nd would be a fair date for Yorkshire. I have information, however, that the insect occurs there generally, some three or four weeks later, and that only in early seasons is it found at such an early date. I am not surprised that a second brood does not occur in the Barnsley district, as the specimens obtainable there are *T. biundularia*, the single-brooded species. The type of the insect obtainable there is exactly the same as our Epping and Darenth forms, and my series from Barnsley contains these typical as well as indistinctly marked specimens, and is not made up entirely of well-marked varieties. I think the notes quoted by the Rev. G. A. Smallwood should be sufficient to convince Mr. Harrison that I do not stand alone in stating that *T. crepuscularia* has a brown-

grey and *T. biundularia* a white ground colour. I do not exactly understand the sentence, "It is not fair to pick them out," &c., nor what it is intended to convey. If Mr. Harrison has commenced a kind of sorting process of the Barnsley specimens I do not wonder he gets mixed up, as there seems little doubt that there is only one species obtainable there, endless as the varieties may be. Concerning the "black varieties" of *T. crepuscularia*, it is quite possible, and does not disprove what I suggested, that the varieties of this species are generally suffused with brown. To my mind it is possible to have a variety of any species, suffused to any degree with any of the colours present in the type. Black is present in typical *T. crepuscularia*, and hence this colour may be so developed to the exclusion of the others that a "black variety" is the result. But in *T. crepuscularia* the prevailing colour is brown, and varieties, principally brown in colour, are common; in *T. biundularia* the brown scales are but slightly developed, and give way to the white and black, and hence in this species black and dark grey specimens abound. When I wrote my last notes it was with the hope that our entomologists would take into account the time at which their specimens were obtained, and so give those to whom they sent their duplicates a better chance of a correct determination. Sending away doubtful specimens under a certain name without any explanation as to date, &c., means that the name will be accepted in many cases, and thus only makes a bad muddle worse.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., June 16, 1886.

THE TEPHROSIA DISCUSSION.—*Apropos* of the discussion relative to the distinctness of *Tephrosia biundularia* and *T. crepuscularia*, when a youth, residing in Lancashire, I remember that the older entomologists used to speak with pride upon the capture in Delemere Forest, in Cheshire, of an occasional black *Tephrosia biundularia*. At that time, say about 1857, or a year or two earlier, these suffused specimens were rare among the common light form, eagerly sought after, and even commanded high prices. They, however, became yearly more frequent; and when I last visited that fine collecting-ground the typical(?) or light-coloured form were comparatively rare, and there were plenty of dark forms. This was about 1873. Perhaps

Mr. Joseph Chappel, of Manchester, could tell us more about this change from white to black, which also obtains in another moth, throughout Lancashire and Cheshire, viz., *Amphidasys betularia*.—JOHN T. CARRINGTON; Savage Club, May 27, 1886.

LEPIDOPTERA AT SEVENOAKS.—I have captured the following species here at sallow bloom:—*Panolis piniperda*, *Pachnobia rubricosa*, *Teniocampa munda*, *T. gracilis*, *T. pulverulenta* (*cruda*), *T. gothica*, *T. stabilis*, and *T. incerta* (*instabilis*); I have also taken *Heмерophila abruptaria*, *Tephrosia punctularia*, *Cidaria suffumata*, *Lobophora carpinata* (*lobulata*), *Xylina ornithopus* (*rhizolitha*), *Xylocampa aureola* (*lithoriza*); and *Anticlea nigrofasciaria* (*derivata*), *Larentia multistrigaria*, and *Tephrosia crepuscularia* have been very common. On the evening of the 7th I found two *Notodonta trepida* and one *N. chaonia* at rest on one tree; and I have since taken another specimen of each.—LEWIS F. HILL; Sevenoaks, May 11, 1886.

NATURAL HISTORY OF CHISWICK.—I can now add one more to the list of Bedford Park Sphingidæ, namely, *Sphinx convolvuli*, of which a specimen was taken by F. Nash last summer; but there is no reason for supposing that it breeds in the neighbourhood. The Rev. O. P. Cambridge has been good enough to examine a bottle of Bedford Park spiders, and the following list of species contained may have some value, as giving a new locality for several species of this little-worked class:—*Clubiona terrestris*, Westr., *C. corticalis*, Walck., *Amaurobius similis*, Bl., *A. fenestralis*, Stroëm., *Tegenaria atrica*, Koch, *Linyphia bicolor*, Bl., *L. nebulosa*, Sund., *L. tenebricola*, Wid., *L. concolor*, Wid., *L. insignis*, Bl., *L. bucculenta*, Clk., *L. montana*, Clk., *Neriene nigra*, Bl., *Walckenaera cristata*, Bl., *Pachygnatha degeerii*, Sund., *P. clerckii*, Sund., and one of the Phalangiidæ, *Phalangium saxatile*, Koch. In the 'Spiders of Dorset,' *L. insignis* is stated to be rare in the South of England; but Mr. Cambridge writes that he finds it "common enough at Bloxworth now." F. M. Campbell (Trans. Herts Nat. Hist. Soc., vol. ii., pp. 263-276) states, that the common house spider in Herts is *Tegenaria guyonii*, and that *T. atrica* is extremely rare; and in various parts of the London district, *T. guyonii* is said to be the prevalent form. It is, therefore, interesting to note that all the Bedford Park examples that I have seen (and they are far from few) have belonged to

T. atrica, not one *T. guyonii* having hitherto occurred.—T. D. A. COCKERELL; 8, Priory Road, Bedford Park, Chiswick, May 7.

MOTH TRAPS.—Referring to the remarks made by Mr. H. King (Entom. 139)—Is not the reason of his not catching anything due to the moths flying to the larger light of the windows which were close by? A very good example of the same occurrence was told me by an old lighthouse-keeper of Hunstanton, a small village near Lynn, who says that thirty years ago so many moths, chiefly *Plusia gamma*, came round his light on dark nights that he was obliged to beat them away with a heavy stick; but since a new village has sprung up close to the lighthouse, and at the present time hardly any fly to the light. This seems to be because they are more attracted by the numerous, though not so strong, lights of the village, than by the single light of the lighthouse.—E. M. BELOE, jun.; King's Lynn, Norfolk. [Possibly our correspondent has offered, in his suggestion, the right solution of the failure of many who have tried the moth trap without success.—ED.]

MOTH TRAPS.—From divers remarks made in the 'Entomologist' on this subject, two things are essential to the trap being a success,—the first, and most important, being a suitable night; and the second, an extensive and uninterrupted view. The first may be easily remedied by trying the trap every night, so as to be prepared when the suitable evening does arrive; but without possessing the second it seems hardly worth the trouble to remedy the first. I should here like to ask those of your readers, who use Dr. Knagg's moth trap, or modifications of it, if the moths will remain therein till morning when captured; or if it is necessary to get up two or three times in the night to see if any moths have been captured, and if so, to box them? The advantage of Mr. Sabine's trap (Entom. 138) is that it is next to impossible for the moths to get out when they have entered it; whereas in that of Dr. Knagg's the ingress and egress appear to be equally easy.—A. E. HALL; Norbury, Pittsmoor, Sheffield.

REARING LARVÆ.—For some time I have adopted the plan advocated by Mr. Seymour St. John (Entom. 164), but with a little variation. As this may be of interest to some of your readers, I will, with your permission, explain my method. In the place of bell-glasses, which are rather costly, I purchase the

bottoms of these—that is, the parts cut off by glaziers to reduce the bell-glasses to saleable dimensions. All glaziers do not appear to keep these, but I have had no difficulty in meeting with them. The most usual size is about four inches in diameter, and the same height; and the charge for them is 2d. or 3d. each. I find little bottles filled with wet silver sand better for keeping the food-plants fresh than the same filled with water, and the advantage is that one is able to place them horizontally, and so avoid the danger of disturbing the earth, and do away with the necessity for tin cylinders. I have had four hundred or more larvæ feeding at once on this plan at a cost of not more than half-a-crown. The cylinder of glass can be placed or fitted on a flower-pot or jam-pot full of earth, and the habits of the larvæ are perfectly open to observation.—W. R. SCOWCROFT, The Quarry, Lathom, Ormskirk, June, 1886.

COLEOPTERA IN MIDDLESEX.—I was at Kingsbury (Middlesex) for three weeks at the beginning of June, 1885. Favoured with splendid weather I was very successful amongst the insects, especially Coleoptera. The locality seemed very favourable for beetles, and I obtained great numbers, both of genera and species. Amongst the captures were *Cicindela campestris*, *Notiophilus biguttatus*, *Elaphrus riparius*, several species of the genus *Carabus*, *Dyschirius æneus*, various *Dromii*, *Anchomeni*, *Pterostichi* and *Amaræ*, *Acupalpus exiguus*, *A. meridianus*, *Stenolophus vespertinus*, *Bradycellus harpalinus*, and *Bembidium articulatum*. The following Hydrophilidæ:—*Cymbrodyta ovalis*, *Philhydrus melanocephalus*, *Hydrochus angustatus*, *Sphæridium scarabæoides* and *S. marginatum*, and various species of *Cercyon*. In the Staphylinidæ I made numerous captures, including *Leistotrophus murinus*, which I found under patches of dry dung, and which, when disturbed, ran with great rapidity; *Pæderus littoralis*, and various species of the following genera:—*Aleochara*, *Tachyporus*, *Tachinus*, *Quedius*, *Ocypus*, *Philonthus*, *Stilicus*, and *Stenus*. Under various dead animals I captured *Creophilus maxillosus*, various *Cholevæ*, *Necrophorus humator*, *N. ruspator*, and *N. vespillo*, *Silpha rugosa*, *Hister cadaverinus*, *Saprinus æneus*. Sweeping was very successful; *Brachypterus urticæ*, *Meligethes picipes*, *Anisosticta 19-punctata*, *Coccinella septempunctata*, *Mysia 22-punctata*, various *Agriotes*, *Adrastus limbatus*, *Campylus linearis*, various *Telephoridæ*,

including *Malachius bipustulatus* and *Anthocomus fasciatus*, *Rhenosimus planirostris*, *Pyrochroa serraticornis*, several of the genus *Anaspis*, *Anthicus floralis*, numbers of Curculionidæ, including *Orchestes alni*, *Apion ulicis* (which was very abundant in the flowers of broom and gorse), *Rhychites æquatus* and *R. germanicus*, numerous Chrysomelidæ being swept from the hedges and herbage. In the Longicorns I obtained *Clytus arietis* by sweeping nettles, *C. mysticus* on rough palings, and *Grammoptera tabacicolor*, *G. ruficornis*, and *G. præusta*. In dung I captured, amongst others, *Onthophagus vacca*, *Aphodius erraticus*, and other *Aphodii*, and *Geotrupes stercorarius*. I obtained the following in marshy spots. *Trox scaber*, *Heterocerus laevigata*, *Priobium castaneum*, *Byrrhus pilula*, *Parnus auriculatus* and *P. prolifericornis*. I also got *Scolytus destructor* and *Bruchus seminarius*. My collecting was confined strictly to Middlesex.—J. HAROLD BAILEY; 48, Plymouth Grove, Manchester, May 14.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 2nd*, 1886. R. M'Lachlan, F.R.S., President, in the chair. The following gentlemen were elected Fellows of the Society, *viz.*:—Messrs. C. Baron-Clarke, M.A., F.R.S., H. Wallis-Kew, W. Dannatt, J. P. Mutch, B. W. Neave, A. C. F. Morgan, and Wm. Warren. The President announced that Mr. F. E. Robinson, a Fellow of the Society, and formerly a pupil of Prof. Westwood, had been killed by a tiger in India on April 27th last. Mr. Stevens exhibited a specimen of *Heydenia auromaculata* (Frey.), from the Shetlands, a species new to Britain. Dr. Sharp exhibited a number of species of *Staphylinidæ*, prepared by him some years ago with a view to their special protection and permanent preservation. The insects were placed in cells of cardboard, and these were covered above, or above and below, with cardboard, the whole being hermetically sealed by applications of successive layers of bleached shellac. The President said the plan appeared to be very successful where the cardboard cells were left open on both sides, but when the cell was complete below only one surface of the insect could be examined. Mr. Billups exhibited *Meteorus*

luridus (Ruthe), a species of Ichneumonidæ new to Britain, obtained by Mr. Bignell. Mr. W. White, in exhibiting cocoons of *Cerura vinula*, called attention to the vexed question as to how the perfect insect escapes from these solid structures. He was inclined to think that formic acid, secreted by the insect, was a probable factor in the operation. The question as to the mode of escape from these cocoons of the parasitic Ichneumonidæ and Diptera was also raised; and the President, Baron Osten-Sacken, Mr. Waterhouse, and Prof. Meldola made remarks on the subject. Mr. Elisha exhibited living larvæ of *Geometra smaragdaria* from the Essex marshes. He also exhibited the singular pupæ of *A. bennettii*. Mr. Howard Vaughan exhibited a series of several hundred bred specimens of *Peronea hastiana*, showing the innumerable varieties of the species. He also exhibited, on behalf of Mr. Sidney Webb, of Dover, an interesting series of *Cidaria suffumata*, with especial regard to the progeny of particular females, the parent and the produce of the eggs laid by her being carefully separated. Mr. Vaughan also read notes on the subject communicated by Mr. Webb; and Mr. Jenner Weir, Mr. Waterhouse, Mr. Distant, Dr. Sharp, and Mr. Stainton took part in the discussion that ensued. Mr. A. G. Butler communicated a paper on "New Genera and Species of Lepidoptera-Heterocera from the Australian Region," in which 21 new genera and 103 new species were described. Mr. J. S. Baly communicated a paper on "Uncharacterized Species of *Diabrotica*."—HERBERT GOSS, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 6th*, 1886. R. Adkin, F.E.S., President, in the chair. Messrs. F. Enock, F.E.S., and C. Brady were elected members of the Society. Mr. Elisha exhibited a bred series of *Antispila pfeifferella*, Hb., together with specimens of the mined leaves, and the pupæ-cases cut out from the leaves. With reference to his exhibit, Mr. Elisha stated that there was a note, in one of the early volumes of the 'Entomologist,' in which it was stated that the larvæ of this species pupated under the surface of the earth. This season he had bred some hundred or two of the insect, and he found that they all placed their cases among the decaying leaves. Mr. Wellman exhibited *Cidaria suffumata*, Hb., including two of the Dover form; a fine bred series of *Pygæra*

pigra, Hufn., and also *Adela cuprella*, Thnb., taken this spring on Wimbledon Common. Mr. Mera, *Aleucis pictaria*, Curt., of this season. The President exhibited a long series of *Endromis versicolor*, L., and said that in March, 1884, he received twenty-five ova from Mr. Gibb, the parent moth having been inbred, originally, from Rannoch specimens. In due course the larvæ fed up, and the first moth, a female, emerged on April 19th, 1885, and was followed by eight others, all females. This year he had bred twelve males; and he thought it worthy of notice that the first year he should breed all females, and this year all males. His observation only applied to a portion of the brood, and it would be interesting to ascertain how the remainder emerged. Mr. Carrington contributed notes and observations on a recent visit to Selborne, the home of Gilbert White.*

June 3rd, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Percy Rendall was elected a member. Mr. Tugwell exhibited a varied series of *Spilosoma menthastri*, Esp., bred from eggs received from Hartlepool; also a specimen of *Anosia archippus*, Fab., taken on 21st September, 1885, at Trevilly, by Mr. Harris Saundry. Mr. Sheldon exhibited two specimens of *Stauropus fagi*, L., series of *Eupithecia pusillata*, Fb., and *Retinia turionana*, Hb. Mr. Wellman, varieties of *Cidaria truncata*, Hufn.; living larvæ of *Eugonia autumnaria*, Wernb.; *Acidalia emarginata*, L., and *Epione apiciaria*, Schiff. Mr. W. A. Pearce, *Nemophora swammerdammella*, L., Sta. Mr. West, of Streatham, preserved larvæ of *Eubolia cervinaria*, Schiff, and *Xanthia citrago*, L. Mr. Shearwood, a number of preserved and mounted larvæ, among which were *Phorodesma smaragdaria*, Fb., and *Aciptilia galactodactyla*, Hb.; and Mr. Adkin, four specimens of *Saturnia pavonia*, L., bred from a nest of gregarious larvæ taken at Chatterdean on elm, and which had been fed upon hornbeam, the colours of the imagines being particularly rich and bright. Mr. Billups exhibited a specimen of *Paussus favieri*, Fairm, found in nests of the ant, *Pheidole megacephala*, at Portugal.

June 17th, 1886. The President in the chair. Messrs. A. T. Storey and A. Eland Shaw were elected members. Mr. Jager

* These notes are more fully set forth in the 'Field' newspaper of May 15th, 1886, p. 639.

exhibited *Erastria venustula*, Hb., from Horsham. Mr. E. Cook, *Heliaca tenebrata*, Scop., and *Emmelesia albulata*, Schiff. Mr. Sheldon, forms of *Hepialus lupulinus*, L., and bred series of *Earias chlorana*, L., and *Crambus chrysonuchellus*, Scop. Mr. Frohawk, *Acontia luctuosa*, Esp., from Cudham, and the life-history of *Cidaria silaceata*, Hb. Mr. Wellman, *Nemeobius lucina*, L. Mr. W. A. Pearce, *Pygæra pigra*, Hufn.; also *Cucullia verbasci*, L., from larvæ found at Mickleham. Mr. J. T. Williams, *Acronycta alni*, L., and a fine series of *Aphomia sociella*, L., bred from the cluster of cocoons found by him under a stone in his garden at Foots Cray, and which were exhibited by Mr. Billups at the meeting of the Society held on the 15th April last. Mr. Billups exhibited large groups of the larvæ of *Hyponomeuta padellus*, L., which he said he had received from Gravesend, and he understood that an enormous amount of damage had been caused by these larvæ to the whole of the apple orchards in Kent and Oxfordshire. A discussion then took place as to the probable cause of the large number of these larvæ, and the best means of exterminating them, in which Messrs. Adkin, Tugwell, J. T. Williams, Chaney, Wellman, W. West, and others, took part. Mr. Billups also exhibited the following Ichneumonidæ, bred by Mr. Elisha: *Colastes braconius*, Hall, from *Lithocolletis spinicollata*, Kol., Sta.; *Apanteles bicolor*, Ns., from *Lithocolletis lantanella*, Schr., Sta.; *Limneria interrupta*, Gr., from *Sericoris euphorbiana*, Frr.; also *Mesoleius sanguinicollis*, Gr., and *Pimpla brevicornis*, Gr., both bred by Mr. Wellman from *Gracillaria stigmatella*, Fb., Sta.; and he also exhibited two species of Tenthredinidæ,—*Ailantus viennesis*, Schr., and *Hylotoma cæruleipennis*, Ktz., taken in copula at Hayling Island on the 7th June.

Meligethes exilis and *Anthicus schaumi* were mentioned in the report of this Society's meeting of February 18th, 1886 (Entom. 94), as being from Lincoln, whereas they were received from a correspondent at Lincoln, but were taken elsewhere.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

JOHN ARTHUR POWER, M.D.

Born, 18th of March, 1810.

Died, 10th of June, 1886.

A good man; a true lover of nature; an enthusiastic coleopterist. Possessing great store of entomological knowledge, and placing it freely at the disposal of others. A genial and warm-hearted friend.



Believe me yrs ever.

Wm A Powers

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JOHN ARTHUR POWER.

JOHN ARTHUR POWER was born on the 18th March, 1810, at Market Bosworth, in Leicestershire, where his father, Dr. John Power, practised as a medical man; whilst his grandfather, also Dr. John Power, was a medical practitioner at Lichfield. He inherited his taste for botany and entomology from his grandfather, with whom he collected specimens when quite a boy. Dr. John, the father, having removed to London, John Arthur was sent to the Merchant Taylor's School, whence he proceeded, with a Scholarship, to Clare Hall, Cambridge, where two of his uncles were already Fellows,—Joseph Power, 10th Wrangler in 1821, afterwards Fellow and Tutor of Trinity Hall and University Librarian; and Alfred Power, 2nd Classic in 1826, afterwards Fellow of Downing, Vice-President of the Local Government Board in Ireland, and now K.C.B.; whilst a cousin, John Power, 8th Wrangler in 1841, was afterwards Fellow and Tutor and ultimately Master of Pembroke.

John Arthur Power took his B.A. degree in 1832, as 27th Wrangler, and at the top of the third class in Classics. Amongst those who graduated in the same year were Dr. Cookson, the late Master of Peterhouse; Dr. Thompson, the present Master of Trinity; the late Dean Alford, of Canterbury; Bishop Harold Browne, of Ely and Winchester; Thomas Webster, of Patent-law renown; Robert Potts, the Euclidian; and Richard Shilleto, the consummate Greek scholar. Though not so brilliant as that of his relatives, John Arthur Power's

success in the Schools sufficed to gain for him a Fellowship at Clare. He proceeded in due course to the degree of M.A., joined the Cambridge Philosophical Society, and commenced the study of Medicine at Addenbrooke's Hospital. There was at one time an idea of his taking part in scientific exploration in the East, and with this view he combined with Medicine the study of Hebrew and Arabic.

In his undergraduate days, Power did something in the way of entomology, but only in desultory fashion. In 1832 or 1833, James Francis Stephens and he made an excursion to Holme Fen, with the result that in one day the former captured thirty, and the latter twenty-seven specimens of *Lycæna dispar*. Possibly the veteran Mr. Frederick Bond may, in his early days, have rivalled this performance; if not he, no other British entomologist remains who can recount a like experience of the extinct Large Copper. About 1834 or 1835, Power began collecting Coleoptera with greater assiduity, and investigated the fen district with considerable success. The first entry in his journal is, "Burwell Fen, June 11th, 1835;" but his capture of *Dromius quadrisignatus*, at Cambridge, is mentioned in a paper of Prof. Babington's, read before the Entomological Society on the 7th July, 1834 (Trans. Ent. Soc. i. 85).

In May, 1841, he married Miss Helena Margaret Jermyn Jermyn, daughter of the Rev. Dr. Jermyn, a gentleman of repute as a herald and genealogist, whose forty MS. volumes of history of the chief Suffolk families are (I believe) preserved in the museum at Bury St. Edmund's. The elder sister of Mrs. Power was married to the late Sir Walter C. Trevelyan; and her brother, formerly Archdeacon of St. Christopher's and late Bishop of Colombo, is now Bishop of Brechin.

In those days, a College Fellowship was forfeited by marriage. Power came to London, and settled near his father, now well-known as an obstetric physician, in Nelson Square, Blackfriars, where he lived for nine years; and whence he removed to the house in Burton Crescent, which continued for thirty years to be a rendezvous for British Coleopterists. He was never in active medical practice, though he succeeded his father as medical officer to the Sovereign Life Insurance Office; but, in conjunction with his younger and only brother, Dr. W. H. Power, down to the death

of the latter in 1877,* he was a most successful medical lecturer and tutor, principally for the Army and Indian Departments. This he continued until a severe paralytic stroke, in January, 1882, compelled him to retire.

Power was elected a member of the Entomological Society of London on the 2nd June, 1834 (Proc. Ent. Soc., 1834, p. xxiv, where "Queen's Coll." is a mistake for Clare Hall); and his name appears in the list of members to the end of 1843, soon after which he resigned his membership. I cannot find that he ever contributed to the Society's 'Transactions'; but from 1855 onwards, there may be found in the 'Proceedings' numerous records of the exhibition by him or on his behalf of species of Coleoptera and Hemiptera which he added to the British lists.

He was chosen a member of the Entomological Club at a meeting held at William Spence's house on the 20th December, 1856; and they who, during the following five and twenty years, have had the privilege of joining those social gatherings, will not need to be reminded what an acquisition to the Club the cheery little Doctor was,—full of chat and anecdote, and invariably producing from his pockets some new British beetle, or some scores of specimens of a kind for which others had sought in vain, or had thought themselves lucky to bring home a solitary one. The last of those pleasant meetings which he attended (and the present writer never saw him afterwards) was at Mr. Grut's house, on the 30th November, 1881.

Disabled in the following year, he withdrew to Bedford, where some of his family were already settled. Writing in September, 1882, he gave the following account of himself:—"I lead a very quiet life at this out-of-the-way place, and am slowly recovering my powers of motion. My mental functions are quite restored, though they were in very bad condition for some time. I can now walk four or five miles, dress myself, feed myself, and all that; but my right hand is yet stiff and numb. I *can* write with it, but much better with the left." In the following March he wrote again:—"Just now I am completely upset by an accident. I trod on my dressing-gown in going down stairs, and fell head foremost nearly from top to bottom. I thought I was smashed, but found no great damage done

* An obituary notice of Dr. W. H. Power will be found in 'The Lancet' of the 10th March, 1877.

beyond a considerable amount of shake and bruise, which for the present puts me quite *hors de combat*, and with muddled brain; but I have no doubt that I shall recover in a few days."

Debarred from the active pursuit of entomology, he amused himself with his garden and greenhouse. When an entomological friend paid him a visit, his old ardour revived; it was soon seen that his intellect was unclouded, and his memory as retentive as ever. He was never happier than when discussing the minute points of difference between obscure and closely-allied species, which he probably had not seen for years, and recounting when, where, and how he captured them.

He died at Bedford, suddenly, on the morning of the 9th June, 1886;* leaving a wife, two sons, and six daughters. One son is in South America, one daughter in India; but the majority of his children, not unattended by grandchildren, were around or near him during the closing years of his life. Entomologists were represented at his grave by the Rev. W. W. Fowler and Mr. Grut.

It is curious that Dr. Power was upwards of forty years of age before he became the ardent collector that the existing generation have known him. "The indefatigable Power," was Newman's description of the man to whom he dedicated the second edition of 'The Insect Hunters;' and, during the thirty years that preceded his paralytic stroke, the Doctor was indeed indefatigable, and was without exception the most energetic and successful collector in the kingdom; at first of Coleoptera alone, but latterly of Hemiptera also. It would be interesting to know how many species he added to the British list; but perhaps this was not his strongest point. It was his speciality to be able to divine the spot where some rare and little-known species was likely to be found, to guess intuitively what would be its habits: he would make up his mind to go and find it; and find it he usually did, often in abundance, where others searched in vain. As an instance of the way he went to work, I may refer to his capture of *Drypta emarginata*. Somebody produced a specimen at one of the Entomological Club meetings, and the Doctor was twitted that

* The date is given, *ante*, p. 192, as the 10th June; and in Ent. Mo. Mag. xxiii. 44, as "Thursday, June 9th." But Thursday was the 10th. I have before me a letter announcing his death "this morning," which is not only dated on, but bears the post-mark of, June the 9th. I think the post-mark settles the question.

he had never taken it:—"Well, I will go and get it," was his reply. And go he did, to Portsmouth and back, five times; thus travelling (say) 1000 miles, to obtain this single insect, the result being the "fine series" of *Drypta*, mentioned in Proc. Ent. Soc. 1857, pp. 70, 90. Power's energy and perseverance were unbounded,—he would go on until he did succeed; and he seldom rested until he had captured a sufficient number to supply the wants of all his friends. His liberality was without stint; his knowledge was freely imparted, and he was ever ready to help and encourage a youngster; in giving away specimens by the score, that must have cost him many a tedious hour to set and arrange, to say nothing of the journeys—to all parts of England, Wales, Scotland, and Ireland—which he had undertaken to capture them, his generosity was conspicuous.

It would be easy to raise a laugh at the wiry active little man,—regardless of appearances, and oblivious of all but the immediate object of his quest,—perched at the top of a rotten willow-tree; crouching for hours together in a ditch; standing up to the knees in a river, scooping the water upon the bank with his hand; poking about in ants'-nests, with string round his wrists and ankles; trotting off with a blacking-bottle and a bit of meat to set a cunning beetle-trap; or coming home at night with his hat full of *débris* from the bottom of a haystack, and scarcely waiting to sup before the contents were emptied on the dining-room table for careful examination. But there was such a genuineness and heartiness about him, and about all his ways, that none could fail to revere and honour him. His enthusiasm silenced the scoffer; his earnestness compelled respect.

It is as a collector that Dr. Power will be remembered. I do not know that his knowledge of entomological science, or of the literature of the subject, was pre-eminent; with the exception of *Zeugophora turneri*, I am not aware that he ever described an insect. His published writings consist only of short notes in the periodicals of the day. After the death of Edward Newman, Dr. Power gave valuable assistance in editing this Magazine, commencing with the tenth volume; but it is believed that the following list contains all that can be attributed to the Doctor's pen:—

1. Notes on the Genus *Haliphus*. Zool. xiv. 5174 (1856). This contains a notice of the capture of species belonging to other genera, previously unrecorded as British.

2. Notes on Myrmecophilous Coleoptera. Report of British Association, 1858, p. 129. Zool. xvi. 6287 (1858).
3. Capture of *Polystichus fasciolatus* in Sussex. Zool. xvii. 6791 (1859).
4. Determination of *Philonthus prolixus*, a Brachelytron new to the British Fauna. Zool. xix. 7325 (1861).
5. Capture of *Mycetophagus quadriguttatus*. Zool. xix. 7325 (1861).
6. Note on two new Brachelytra. Zool. xix. 7530 (1861). *Oligota apicata*, Er., and *Bledius crassicollis*, Er.
7. Capture of two Coleopterous Insects new to Britain. Zool. xx. 8300 (1862). *Aphodius zenkeri*, Er., and *Tachyusa coarctata*, Er.
8. *Sirex gigas* an Enemy of the Hive-bee. Zool. xxi. 8343 (1863).
9. Description of a new British *Zeugophora*. Zool. xxi. 8735 (1863). *Z. turneri*, Power.
10. Capture in Scotland of a *Cis* new to Britain. Zool. xxi. 8792 (1863). *Cis lineato-cribratus*, Mellié.
11. Coleopterous doings in Kent and Devonshire. Zool. xxi. 8793 (1863).
12. Occurrence of *Catops colonoides* of Kraatz in Britain. Zool. xxii. 8997 (1864).
13. Captures of rare Coleoptera. Zool. xxii. 8998 (1864).
14. Occurrence of an *Ennearthron* new to Britain. Ent. Mo. Mag. i. 138 (1864). *E. fronticorne*, Panz.
15. Capture of *Quedius truncicola*. Ent. Mo. Mag. i. 138 (1864).
16. Capture of *Oligota flavicornis*. Ent. Mo. Mag. i. 139 (1864).
17. Occurrence of a *Cryphalus* new to Britain. Ent. Mo. Mag. i. 212 (1865). *C. tiliæ*, Fab.
18. Description of a Genus and Species of Brachelytra new to Britain. Ent. Mo. Mag. i. 222 (1865). *Borboropora saulcii*, Kraatz.
19. On some new and rare species of British Coleoptera. Ent. Mo. Mag. i. 235 (1865).
20. Captures of Coleoptera during the past winter. Ent. Mo. Mag. i. 260 (1865).
21. Fifteen species of Coleoptera new to the Reigate district. Proc. Holmesdale N. H. Club, 1865, p. 5.
22. Seven species of Coleoptera new to the Reigate district. Ibid., p. 8.
23. Revision of the Genus *Necrophorus*, as far as regards the British species. Entom. ii. 197 (1865).
24. Captures on the Birch Wood day. Entom. ii. 269 (1865).
25. Turner's Coleopterous captures: a new *Anobium*. Entom. ii. 270 (1866). *A. nigrinum*, Sturm.
26. *Atomaria ferruginea* and other Coleoptera at Birdbrook. Entom. ii. 322 (1865).
27. *Dromius fasciatus* at Littlington, near Royston. Entom. ii. 323 (1865).

28. *Ceuthorrhynchus suturalis* of Fabricius on the Welsh Coast. Entom. iii. 13 (1866).
29. *Hydroporus neglectus* of Schaum discovered in Britain. Entom. iii. 43 (1866).
30. Re-discovered or new British Coleoptera: *Nemosoma elongatum*, *Hydroporus neglectus*, *Helophorus nanus*, *Phytobius quadrinodosus*, *Ilybius subæneus*, &c. Entom. iii. 77 (1866).
31. Note, on the cocoon of a *Curculio*. Entom. v. 372 (1871).
32. *Doryphora decemlineata*. Entom. x. 101 (1877).
33. A Contribution to the Entomology of Ireland. Entom. xi. 2 (1878).
34. A List of new species of Coleoptera which have been added to the British Fauna during the years 1872 and 1877 inclusive, with Notices of the principal changes of Nomenclature of others; being a continuation of the Catalogue contained in the 'Entomologist's Annual' of 1872, up to December 31st, 1877. Entom. xi. 62 (1878).
35. The British Hemiptera-Homoptera. Entom. xi. 71 (1878).
36. Note, on distinguishing *Latheticus oryza*, *Læmophilæus pusillus*, and other species found in granaries from truly British insects. Entom. xiii. 95 (1880).
37. Note, Localities, &c., of *Hydroporus oblongus*, *H. latus*, *Cybister ræseli*, *Agabus striolatus*, and *A. tarsatus*. Entom. xv. 203 (1882).
38. Note, Habits and Localities of rare Water-beetles. Entom. xv. 212 (1882).
39. Review of 'Catalogue of British Coleoptera. By Rev. W. W. Fowler and Rev. A. Matthews.' Entom. xvi. 95 (1883).

A reverend gentleman, who knew him well and long, has written:—"It was my great privilege to know the dear old Doctor intimately; certainly there is no one for whom I had more real respect, admiration, and affection than for him. The remembrance of happy St. Pancras days comes back to me whilst I write this. I can hardly realise the family circle without his cheery face,—always bright, always kind, and, as it seemed to me, always happy. When I used to see him with his favourite collection of the 'little things of God,' those lines of Coleridge used often to come into my head, and became in my mind always associated with the Doctor:—

'He prayeth best who loveth best
All things both great and small,
For the dear Lord who loveth us
He made and loveth all.'

His unaffected piety, his tenderness for and sympathy with all,

seemed always to draw one closer to him, and make one feel that in him one had a real friend."

With this testimony I might well close this notice of our departed friend; but, if it be not an anti-climax, as a layman writing for laymen, I should like to add that to my mind the distinguishing features of Dr. Power's character were his cheerful contentedness, his transparent honesty and unassuming simplicity, his liberality in thought and deed, his entire unselfishness. Blameless in every relation, happy in his home, enthusiastic in his favourite pursuit,—his peaceful and unadventurous life has reached its end. All who knew him will remember Dr. Power with affectionate regret. As an entomologist, it will be long before we see his like.

J. W. DUNNING.

VARIETY OF *EUCOSMIA UNDULATA*.



VARIETY OF *EUCOSMIA UNDULATA*.

I BEG to enclose a coloured sketch of a well-marked variety of *Eucosmia undulata*, which emerged in my breeding-cage at the end of last month. It will be seen that the undulating lines, which in the type are quite distinct, are in this specimen merged into one another, so as to form two black bands,—one basal and one median. On the hind wings the transverse lines are extremely indistinct, and indeed scarcely to be made out at all. The only distinct remaining feature of the ordinary type is the zigzag white subterminal line. The specimen is a male. One other male emerged a couple of days before this one, but was of the ordinary type, though rather dark and very distinctly marked.

G. E. CRALLAN.

Cambridgeshire Asylum, Fulbourn, near Cambridge,
June 16, 1886.

[The woodcut given above is drawn by Mr. H. Knight from Dr. Crallan's sketch.—ED.]

LOCALITIES FOR BEGINNERS.

BY JOHN T. CARRINGTON, F.L.S.

No. IX.—WESTERHAM.

THE utility of the former articles of this series having been demonstrated by thanks received from both beginners and older entomologists, I am induced to add to their number.* Being requested some time since to take charge of one of the summer field excursions of the South London Entomological and Natural History Society, I selected Westerham, which was duly visited by some two dozen or more members on the 17th of July last. These for the most part visited the locality for the first time, and several expressed a desire that I should write something on the locality, so that others might benefit by knowing so fine a collecting-ground; hence the following description of Westerham.

Westerham is in Kent, some seven miles west from Sevenoaks, on a branch line of railway from Dunton Green Junction, of the South Eastern Railway, and is about twenty-five miles from Charing Cross, whence there are frequent trains, the last returning from Westerham at 9.40 p.m. The geological formation of the district is very varied, as, in consequence, is also the flora. To the north of the village there is chalk for miles running east and west; whilst southwards is part of the long range of hills covered with heather, bilberry, Scotch fir, with large sections of woodland containing the usual masses of oak, beech, birch, &c.

On arrival at the railway station we pass up to the village, bearing to the left where the road divides past the stable entrance to the 'George and Dragon' hotel, at which house every accommodation for refreshment and lodgings may be obtained. There is also a second hotel, the 'King's Arms.' The village is of some size, and doubtless lodgings may be obtained in private houses when preferred.

To work the chalk districts, return past the station and follow the road for about a mile, when a large chalk-pit will be reached; on either side of this are pieces of rough collecting-ground, such

* For former articles in this series, see vol. xii., p. 162, Wanstead Flats; vol. xii., p. 188, Riddlesdown; vol. xii., p. 209, Darenth; vol. xii., p. 233, Loughton; vol. xii., p. 259, Wickham; vol. xiii., p. 74, Sevenoaks; vol. xiii., p. 121, Pinner; vol. xiii., p. 169, Wicken; also, though not numbered, vol. xvii., p. 145, Rannoch.

as is most frequented by the chalk-hill loving species. A little distance to the left are some trees, but this woodland I have never tried, though from a distance it looks worth a trial.

From the 'George and Dragon,' if we cross the main village street, we shall, by bearing to the left, find a passage between the houses. This leads us down to a little bridge over a very small stream, which is the River Darenth; crossing this and the meadow we enter the park, and follow the path in front of us up the hill. Here it is worth while looking back, for we get a good view of the village and the distant hills to the northward, one of the higher points to the right being Knockholt beeches, well known as a landmark, but a sadly disappointing place to visit. Continuing our path, and bearing to the left, we come to a high-road leading from Westerham to Crockham Hill; we follow this for a few yards southwards, when we come upon some common-land, and see, again to our left, a schoolhouse. Here begins our collecting, about ten minutes' walk from the village. All to the left of the road is open and free to collectors.

Without specifying any long list of names of insects to be taken on this part of the district, I may mention that heath (*Erica*) and ling (*Calluna*) constitute the chief undergrowth, with bracken in patches, though very many other low plants occur. Among the trees and shrubs, Scotch fir and juniper are most common, with sallow and many others studded about in suitable places. Behind the schoolhouse will be found some old sand-pits, which should be a fine hunting-place for Hymenoptera, &c.

To continue our walk we will pass close to the west of the school, and on the same side of the allotment gardens, which are bounded by a hedge of very mixed growth and well worth beating. A little way along, the gardens are divided by a path through them; this we follow, taking the path along the east side of the gardens to the end where it meets a cartway across the heath. On the sloping bank, as we leave the thicker scrub, I have taken several good species, such as *Nemoria viridata*, one or two of the Knot-horns, viz., *Phycis fusca* (*carbonariella*), *P. ornatella*, *Pempelia palumbella*, &c., with lots of other Lepidoptera worth taking.

On arriving at the cartway, we notice on the other side quantities of juniper, which is worth working for the special things affecting it. As, however, my special object is to point out the bearings of the ground for future collecting, we will

continue to the left or eastwards up the cartway and over the brow of the hill, until we come to a cottage surrounded by a high hedge. Here we find the boundary hedge of the common, with a gate leading into a field much overgrown with heath, ling, wild thyme, and many other favourite food-plants for various orders of insects. This is a very likely patch of ground, much sheltered by tall hedges of beech and oak. Here we may pause a little, and beat over this growth with certainty of getting something worth boxing. Following the cartway by the west side of the hedge, we now work south-westward until we come to a lane to the left. This lane has a wood to the right hand, and a very fine old beech hedge on the left. We shall find beating or mothing well repay us in this old lane. In the oak wood on the right are some fine patches of foxglove and other plants in the clearings. Here were found, by the visitors on the 17th July, plenty of larvæ of *Eupithecia pulchellata* and other things. We will follow the lane down to the end of the wood, when we come to a gate at the right, over which may be obtained a very fine view of the open country lying between us and the South Downs which loom up in the distance. To our left we see Tunbridge Wells, and over to the right, some eight or ten miles away, is East Grinstead, with Tilgate Forest beyond to the westward.

We now return up the lane back to the common, for this has been a slight digression from our walk. Before us are several paths leading in various directions from this point, so we take the second to the left. This will take us quickly down a rather steep hill into the main road, which we left by the schoolhouse. Where this path joins the road are one or two cottages, and we must now decide whether to extend our walk southwards or to make our way back to Westerham through the woods.

If we take the southern road we shall find it very well worth exploring towards Crockham Hill. Here are old fir-woods, with plenty of heather, &c., and some interesting scenery. This will add very considerably to our walk, and is perhaps better taken on a day of its own. We will therefore turn northwards up the road as though returning to Westerham. On our left is a very large wood of mixed trees; this is the Tower Wood, so called from a ruin about its centre, said to be of a hunting-lodge or

resting-place much used by Henry VIII. We enter the wood by a gate on the left hand as we approach the top of the hill. Passing along the ride we come to a cross ride, and turning down this to the left find the Tower ruin. Passing this we now enter quite a different character of wood, where fine old beeches form a cool canopy of shade in the heat of a summer's day. Through these is the sward of the park, studded with groups of well-grown old trees, most suitable for pupa-digging. To get to these we must cross the ditch-like stream at the bottom of the valley, which stream is the source of the River Darent. As, however, we have explored enough for one ramble, we follow the path on the right bank of the stream, and through the wood down to the mill, passing which we take the lane up to the village, which is quite close, and so up to our head-quarters the 'George and Dragon.'

It must be remembered that it is necessary to get leave for the Tower Woods, which leave may be obtained by writing to the owner, Colonel Warde, Squerryes Court, Westerham, for a ticket for the day. This he most kindly gives, as a rule; but as there is so much other ground equally good, over which we may collect without troubling the colonel, it is by no means necessary to write for this leave on every visit to Westerham.

Another very interesting walk in the neighbourhood is by taking our way westward down the village street from the 'George and Dragon.' We continue until we pass a long pond on our left hand, when a road leaves the high-road to the left and goes between some iron fencing. This passes the entrance to Squerryes Court, which may be seen among the trees to the left. After passing the grounds we come to a farm-house, also on the left, and opposite this is a lane leading to some hop-kilns. Just before reaching these is a path to the left over a couple of fields, leading into a wood beyond. This wood is part of Westerham Chart, and a very good collecting-ground; bilberry is here in great profusion. By taking our way sharp to the left on entering the wood we come to the long ride, a fine avenue of fir trees, which would make an excellent sugaring-walk of nearly a mile in length. This avenue starts from a gate which leads into a hop-garden nearly opposite the farm mentioned, and ends at the top of the hill, overlooking the valley at a point a couple of miles west of where we passed the foxgloves in our last walk.

If on entering the wood we follow the path westward, we come to the high-road again, and, bearing to the left hand, we shall find some nice collecting-ground, with very mixed undergrowth, shrubs, and trees; birch being in plenty. I have seen this place and all the Chart south of this road, east of the mill on the top, well alive with insects in early spring, *Brephos* especially abounding. In continuing our walk we may either take the road to the east of the mill on the top of the Chart and so back to Westerham, or, if London bound, across Lingfield Common to Oxted station, and so home.

The Westerham district is good at any period of the year, when collecting is to be done, from sallows in the spring to heather bloom in the autumn. The flora and foliage are so varied that nothing will repay at any time during the season; while many moths should be taken at sugar, both in species and specimens. Much of the ground is open to the public, and the locality is by no means over-run by excursionists.

I have given but a very slight sketch of some of the many walks to be taken in the neighbourhood, and only sufficient is intended to induce naturalists to take an interest in the locality. I leave to the explorers the pleasure of finding out for themselves what occurs in the district, and the sudden surprises in store for them will, I am sure, make many an entomologist rejoice that he has visited Westerham.

Savage Club, Savoy, London, W.C., July 24, 1886.

DEIOPEIA PULCHELLA.

BY W. F. DE V. KANE, M.A., M.R.I.A., F.E.S.

MR. SALWEY'S paper (Entom. 170), discussing the claim of *Deiopeia pulchella* to be considered a permanent British species or merely an occasional visitor, touches upon a subject which is gradually attracting increased attention. The migrant habits of many of our Heterocera and some of our Rhopalocera are becoming more widely noted, although the causes are still somewhat obscure. The increased abundance of many of the Sphingidæ in Britain, during summers of abnormal heat, appears not due solely to the suitability of such seasons for the reproduction and multiplication of such of them as require a greater warmth during some stage

of their life-history than is afforded by the normal climate of Britain at that period of their existence, but seems also largely consequent on a corresponding increase of temperature on the Continent at the period of the flight of the imago; for it is undoubtedly the fact that the activity of the perfect insect is largely influenced by this condition, and the great distances which many of the large hawk-moths are capable of traversing have been attested by records of the capture of various species on board ships in mid-ocean [see Entom. 147.—ED.]. Also among some species of Lepidoptera excessive multiplication, owing to local causes, has been observed to induce a migration of the imagines, probably in search of a less depastured district.

The records of Irish Entomology, so far as they are available, seem to bear out the above opinion; for the sudden appearance of *Colias edusa* and *Sphinx convolvuli*, &c., in England, in such summers as that of 1885, is generally paralleled in Ireland by a corresponding phenomenon, but in a lesser numerical degree; but if a second hot season succeeds, very usually the first year's migrants are found to reproduce themselves in such numbers that our fields and gardens are replenished to perhaps an equal degree with those of the more favourably situated island.

These remarks, however, may seem to bear but little on the beautiful insect whose parochial settlement Mr. Salwey discusses. But, although it is very hard to believe, there seems good reason for maintaining that *Deiopeia pulchella* is an erratic species, and has some habit of migration which is very hard to account for in a lepidopteron of apparently such weak powers of flight. Possibly it has some power of sustaining a lengthened flight when carried upon a strong wind; for it has been taken, on one occasion at least, lately, far away in the Atlantic; and whether it flew the whole distance or was carried on the rigging of a ship, the fact remains that the imago has some habit which conduces to a wide distribution, whether by ship or railway train. In Central Europe its occurrence is, I believe, usually looked upon as sporadic; but in the southern countries, chiefly those on the Mediterranean coasts, or in islands such as Corsica, it breeds abundantly and constantly. This is also the case along the North coast of Africa and Sierra Leone; and it appears to have spread over a wide portion of the earth's surface, chiefly such regions as enjoy a subtropical climate.

While, therefore, it seems probable that specimens from time to time find their way to Britain, as well as to some countries on the Continent, which are ill-adapted for its permanent establishment, yet there seems good reason to think that the annually recurring notices of its capture in the southern counties of England, as cited by Mr. Salwey, point to its permanent establishment there, although the delicacy of its constitution prevents its reproduction in any considerable numbers, except where more genial climatic conditions exist.

A careful investigation of its life-history, combined with a comparison between the climates of Algiers, Corsica, or the southern portion of Provence and that of Britain, would probably throw much light upon this obscure question; and it may be allowable to suggest that while the summer of the South of England seems warm enough for the requirements of many exotic insects, both our spring and autumn are widely dissimilar from those of countries which border the Mediterranean; and this may afford the explanation desired.

Mr. Harcourt Bath notices (Entom. 174) the profusion in which *Pieris brassicæ* has occurred in England during the past two seasons. Here, in Ireland, I observed it to be somewhat more numerous than usual, and this summer this is much more the case. The cause, perhaps, is the same as that I have indicated in the above remarks; and, as usual, we seem to lag behind England in good fortune.

Sloperton Lodge, Kingstown, Co. Dublin, July, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

CÆNONYMPHA TYPHON NEAR BARMOUTH.—During the past week we have taken *C. typhon* (*davus*) in some abundance on a piece of peat moss a few miles from here, and as this insect is usually found at rather high elevations, it may be interesting to note its occurrence at this station, which is considerably less than 50 feet above sea-level. All the specimens taken have the grey and shaggy appearance of the hind wings described by Newman as characteristic of the typical *C. typhon*, as distinguished from the var. *rothliebi*. The latter we have not noticed here.—E. H. GREERLY; Barmouth, July 3, 1886. [This communication answers Mr. W. T. Kerr's enquiry, Entom. 124.—Ed.]

RESTING HABIT OF *LYCÆNA MINIMA*.—On the 19th of June, at Horsley, Surrey, I found numbers of *Lycæna minima* (*alsus*) asleep on the undersides of the leaves of the small shrubs on the sheep leas. Fifty or more on one little tree about three feet high (a seedling beech). The afternoon was dull and lowering, and nothing on the wing. A note on this habit of *L. minima* may be interesting, and perhaps useful, to some of your readers. —JOHN A. HELPS; Newstead Lodge, Westhall Road, Forest Hill, S.E., June 28, 1886.

DEIOPEIA PULCHELLA IN SOUTH DEVON.—I am able to give one more instance of the capture of *Deiopeia pulchella* which has not been previously recorded. I have in my possession a fine full-coloured specimen captured by a relative, an old entomologist, in the month of October, 1876, on the coast of South Devon. Two specimens started out from a bush at the same time, but one succeeded in making its escape.—T. B. JEFFERYS; Clevedon.

DEIOPEIA PULCHELLA.—With regard to Mr. R. E. Salwey's theory (Entom. 170), that *D. pulchella* is established and breeds in England, I think the fact that specimens have been taken in Herefordshire does away with the blow-over theory, at least as far as the western portion of the kingdom is concerned. I have seen two specimens which were captured within three miles of this city, one at rest, the other picked up, and caught with a hat without difficulty; the account I received was that the flight was very sluggish. Probably other captures have occurred. Unfortunately entomologists in this county are very few in number, so that rarities have very little chance of being recorded. —J. B. PILLY; 2, High Town, Hereford, July 22, 1886.

HADENA RECTILINEA.—In reply to Mr. A. E. Hall's enquiry about this insect (Entom. p. 181), my experience is somewhat similar to that of the collector he mentions. I first made the acquaintance of this species in 1881, when it was the most common insect at sugar in a fir-wood near Aberdeen; but in the three following seasons it almost entirely disappeared, only appearing singly. I was from home last year and this during the time of its appearance, therefore cannot say in what numbers it turned up then, but I have not heard of any being taken at all. I shall be in the locality in a week, or thereby, and if the season is as late in Aberdeenshire as here in Orkney, I shall not be too late

in sugaring for it then.—ARTHUR HORNE; Pierowall, Westray, Orkney, July, 1886.

PLUSIA FESTUCE.—Perhaps some of the contributors to the 'Entomologist' would kindly inform me if *P. festuca* is double-brooded. I have been told it is, but as far as my experience goes, I have never found it to be the case. I have taken it every season more or less for about a dozen years, and only in one locality. It formerly occurred in a few places about here, but it is now confined to one locality, which is well adapted for it, being in an enclosed valley containing plenty of its food plants. It feeds on rank grass and yellow flag. I fear it is rather too much searched after every season to continue much longer with us. I, for one, would like to give it one year's rest, in order that it may gain strength in population. I only took three larvæ this season. I neglected to look at them until the middle of July, when I found two imagines were dead and one alive, but they have deposited about one hundred ova. Newman says they fly in August, but I have never seen them. Can any one inform me if the eggs are hatched in the same year, and if the larva hibernates? I have put my ova in a cool cellar, hoping to keep them from hatching until next spring. Will someone be kind enough to give me the information required?—JAMES GRIME; 214, Halliwell Road, Bolton, Lancashire, July, 1886.

ERASTRIA VENUSTULA.—I have great pleasure in recording the successful rearing from ova of the above-named species. — H. JOBSON; 3, Clarendon Road, Walthamstow, July 21, 1886.

RAPID HATCHING OF LEPIDOPTEROUS OVA.—On Friday, the 2nd of July, at about 7 p.m., I beat out of a hedge a female specimen of *Anticlea rubidata*. On reaching home I confined it on *Galium aparine*, and on the following afternoon it died, after laying some thirty eggs. These produced young larvæ about noon on Thursday, the 8th of July. The weather, as most of your readers will, no doubt, remember, was abnormally hot during the above-mentioned period, but for the ova of Lepidoptera to hatch on the sixth day after they were deposited is to me quite unparalleled.—GILBERT H. RAYNOR; Shenfield, Brentwood, July 10, 1886.

THE TEPHROSIA DISCUSSION.—I am much interested in the *Tephrosia* discussion; and a year or two ago was thinking of

raising the question myself in the 'Entomologist.' Here, in Ireland (Killarney), I have never taken the insect earlier than mid-April; and a fortnight later in Cavan, Tyrone, and Sligo, where in normal seasons *crepuscularia* is abundant about mid-May. Single stray specimens I have seen as late as June 10th; and at the same time a few also of *Tephrosia consonaria* and *Boarmia cinctaria*, insects which began to appear the same season during the second week of April. All these specimens I therefore looked upon as cases of retarded emergence. The type of the insect thus taken at the end of April at Killarney, and mid-May in the North of Ireland, has the ground colour yellowish, with the second line duplicated by a ferruginous band, and the wings flecked with yellowish patches. A few specimens also occur at the same time and place, with an almost white ground colour, and the second line dark brown, sharply etched in, and less interruptedly than in the yellower form. This whitish insect, as far as appearance goes, should be *biundularia*; and I have accordingly, in the docile spirit of an enquirer, labelled it so in my cabinet; but I am, up to the present, sceptical. Even if our climate permitted this insect to emerge earlier and produce a second brood in the same season, which, like the summer form of *Selenia lunaria* var. *delunaria*, is smaller and of peculiar coloration, the habit would not be phenomenal. I have never had the opportunity of ascertaining whether at Killarney a July emergence takes place. I notice that in Birchall's list, *T. biundularia* is said to abound in many localities in Ireland, but *T. crepuscularia* is absent from the list. Perhaps the nomenclature at the date of Birchall's catalogue was different, and the synonymy not established. The whole problem, as stated by your correspondents, is a most complex one, namely, that a pale insect emerging in March and April in the South of England has a summer form of a warmer tone, while in the same locality a very similar insect emerging in May to June assumes the livery of the summer form of the other species, but also has occasional specimens of the pale form. Both species also appear to have melanic varieties of various shades of smoke-colour (which, however, I have never seen in Ireland). It is very satisfactory that the theories held by various competent entomologists on the subject have been so fully set forth in your columns; but it is not likely that the matter can be finally

decided till some naturalist, residing near a locality where both reputed species exist, investigates their life-history exhaustively.—W. F. DE V. KANE; Sloperton Lodge, Kingstown, Co. Dublin, July, 1886.

THE TEPHROSIA DISCUSSION.—With reference to the *Tephrosia* controversy, on April 12th of this season a brother entomologist, whilst with me, captured a small example, the ground colour being white, and the transverse lines dark and very distinct. The only difference that can be seen here between the early forms and the late ones of May and June is in the ground colour; the late examples being uniformly white, and not different shades of colour; the transverse lines, however, are exactly the same both in number and form. This season some of the early examples had not ceased to exist before the later ones put in an appearance.—T. B. JEFFERYS; Clevedon, July 7, 1886.

LOBOPHORA VIRETATA.—I should like to add my testimony to that of Mr. Thornehill as to this pretty Geometer occurring in localities where no privet or sycamore is found (Entom. 174). In natural forest land, with holly and hazel underwood, I have taken it, namely, at Tore Mountain, Killarney, at a wood belonging to Colonel Cooper, of Markree Castle, Co. Sligo, and at one in Tyrone. My experience has been, however, that it settles chiefly on the stems of Scotch fir, when they exist in the locality.—W. F. DE V. KANE; Kingstown, Co. Dublin, July, 1886.

PHORODESMA SMARAGDARIA IN ESSEX. — I have succeeded in bringing through a splendid series of *P. smaragdaria*, the larva of which I found on the Essex coast last autumn. — H. JOBSON; 3, Clarendon Road, Walthamstow, July 21, 1886.

PHORODESMA SMARAGDARIA IN ESSEX.—From larvæ I collected on the Essex salt-marshes last autumn, I am now breeding a fine series of *P. smaragdaria*. The species appears to be well distributed along the Essex side of the mouth of the Thames.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex.

DESCRIPTION OF THE LARVA OF HOMÆOSOMA SENECTIONIS.—On the 29th of August last I received a supply of larvæ of *Homæosoma senecionis* from Mr. F. D. Wheeler, of Norwich, who had found the species freely two days previously at Cromer. Length about three-eighths of an inch, and obese in proportion. Head

small, and narrower than the second segment, both it and the frontal plate highly polished. When the larva is crawling the body appears to be cylindrical and fairly uniform in width, tapering only slightly at the extremities, but when at rest it seems to taper much more abruptly from the 11th segment forward to the head. Skin smooth, but each segment having four depressions, two transverse in the centre, and one on each side, together with the clearly defined segmental divisions, give it a somewhat puckered appearance. Ground colour dark olive-green, with faint purple tinge on the dorsal area; head, frontal and oval plates black—in some specimens dark sienna-brown; the alimentary canal, of a darker shade than the ground colour, shows through as the dorsal line; but there are no perceptible sub-dorsal or spiracular lines; spiracles black. Ventral surface uniformly olive-green, some specimens showing a more decidedly green tinge than others. Anterior legs of the same colour as the head, but very indistinctly ringed with white. Feeds in the flower-heads of ragwort, drawing together the clusters of flowers with silken webs; and when full-fed forms a toughish silken cocoon.—GEO. T. PORRITT; Huddersfield, July 6, 1886.

NOTES FROM CHRISTCHURCH AND THE NEW FOREST, &c.—I arrived down here to begin my midsummer collecting about the middle of June this year. Sugaring regularly up to the end of the month proved tolerably successful, having turned up at least forty species of Noctuæ. Among the most important are:—*Neuria reticulata* (*sapponariæ*), *Dipterygia scabriuscula* (*pinastri*), *Rusina tenebrosa* (common), *Leucania conigera*, *L. lithargyria*, *L. comma*, *Mamestra sordida* (*anceps*), *Miana arcuosa*, *Grammesia trigrammica* (*trilinea*), *Cucullia umbratica*, *Noctua triangulum*, *Dianthœcia capsincola*, *Hecatera serena*, *Agrotis porphyrea*, and *Phytometra viridaria* (*ænea*), at Bournemouth. Geometræ:—*Phibalapteryx vittata* (*lignata*), *Eupithecia rectangulata* (at light), *Larentia decolorata* (at dusk), *Metrocampa margaritaria* (common). Bombyces:—*Arctia villica* (several found at rest), *Spilosoma mendica* (one at rest), *Nemeophila russula* (at Bournemouth and Brokenhurst). Sphinges:—*Charocampa porcellus* (one at rest), *Smerinthus populi* (at rest), *S. ocellatus* (bred), *Sphinx ligustri* (several bred). On July 1st I went to the New Forest (Brokenhurst), remaining there till the 8th. The first two days I did not see or take very much; but on the following three or four days I

visited Rhamnor enclosure, accompanied by Mr. Ernest Joy, when we captured between us over fifty *Limenitis sibylla* in fine condition, and a similar amount of *Argynnis paphia* of unusually large size. At sugar, in New Park enclosure, we took *Thyatira batis* and *T. derasa*, *Cymatophora duplaris*, *Aplecta prasina* (*herbida*), *Leucania turca*, *Noctua brunnea*, and others; the last in great numbers. One night I took a very fine *Cossus ligniperda* flying round the trunk of an oak; it was first discovered by the aid of my lantern. At dusk we took in one evening in a small spot two dozen *Calligenia miniata*; we also met with *Phorodesma pustulata* (*bajularia*), *Melanthia albicillata*, *Timandra amataria*, and *Pericallia syringaria* at light. *Boarmia repandata* was very common, and generally at sugar soon after sunset; we managed to obtain some good varieties, including the banded *conversaria*, and a black variety besides. Immediately after my return from Brokenhurst, I was not satisfied without spending a couple of day's work at Holmsley. The first day was on July 13th, when I met Mr. McRae, who took a large number of *L. sibylla*, amongst others. A magnificent *Argynnis paphia* var. *valesina* fell to each; both specimens evidently had only just emerged from pupa that day. *A. adippe* and *A. aglaia* we took freely. On the 16th I met Mr. Pearce, and went again to Holmsley, and found *L. sibylla* still in good condition, though we let several go; but not being a suitable day we soon got tired of butterflies, and took to beating, which ended in our obtaining *Aventia flexula*, *Bupalus piniaria* (female), *Eucosmia undulata*, *Lomaspilis marginata*, *Hypsipetes sordidata* (*celutata*), and *Melanthia albicillata*.—J. M. ADYE; Somerford Grange, Christchurch, July, 1886.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *July 7th*, 1886. J. Jenner Weir, F.L.S., Vice-President, in the chair. Mr. S. H. Scudder, of Cambridge, Mass., United States, was elected a foreign member of the Society. The Rev. H. S. Gorham exhibited specimens of *Eucnemis capucina* (Ahr.), a species new to Britain, discovered in June last in an old beech tree in the New Forest. He also exhibited specimens of *Cassida chloris*.

Dr. Sharp exhibited larvæ of *Meloë*, and read notes on their habits; and Mr. Saunders exhibited a specimen of *Halictus* infested with about thirty *Meloë* larvæ. Mr. Billups remarked that he had recently found forty-seven larvæ of *Meloë* on the body of a specimen of *Eucera longicornis*. Dr. Sharp said that he was of opinion that the operations of these larvæ were not the result of instinct, but were more like reflex actions; the instant the larvæ touched a suitable surface they clung to it. The discussion was continued by Prof. Riley, who disagreed with Dr. Sharp, and believed these larvæ were guided by instinct, as they showed a decided preference for particular hosts. Mr. Jenner Weir exhibited a male of *Lycæna bellargus* and a female of *L. icarus*, which had been captured in copulâ by Mr. Hillman, and shown to the exhibitor at the time of capture. Mr. Weir also exhibited some specimens of *Lycæna* which he believed to be hybrids between *Lycæna bellargus* and *L. icarus*; and he further exhibited, on behalf of Mr. Jenner, four specimens of *Phosphæus hemipterus*, taken at Lewes. The Rev. W. W. Fowler exhibited two specimens of *Chrysomela cerealis*, lately taken by Dr. Ellis on Snowdon; and also two specimens of *Actocharis Readingii*, found at Falmouth by Mr. J. J. Walker. Mr. E. B. Poulton called attention to the fact that the larvæ of some Lepidoptera, if fed in captivity on an unusual food-plant, subsequently refused to eat their ordinary food-plant. He stated that he had observed this with the larvæ of *Pygæra bucephala* and *Smerinthus ocellatus*. Mr. Stainton, Mr. Fowler, and others made some remarks on the subject. Mr. Elisha exhibited a series of bred specimens of *Geometra smaragdaria*, together with the cocoons, containing the empty pupa-cases, attached to the stems of the food-plant. Mons. Alfred Wailly, who was present as a visitor, exhibited a long series of silk-producing moths, including some remarkable hybrids between *P. cecropia* and *P. ceanothi*; and Prof. Riley and Mr. Weir made some observations on these hybrids. Dr. Sharp read a paper on "*Eucnemis capucina* (Ahr.) and its larva." Mr. Dunning read a report on the subject of the importation of humble-bees into New Zealand, from which it appeared that the efforts of Mr. Nottidge, of Ashford, and the Canterbury (N. Z.) Acclimatisation Society, had been successful, and that the long-wanted clover-fertiliser had at length been established in New Zealand. Mons. Peringuey communicated "Notes on some

Coleopterous Insects of the family *Paussidæ*." Mr. J. B. Bridgman communicated "Additions to the Rev. T. A. Marshall's Catalogue of British Ichneumonidæ." Prof. Riley read "Notes on the phytophagic habit, and on alternation of generation, in the genus *Isosoma*." In this paper Prof. Riley described, from direct observation, the phytophagic habit in two species of the genus.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 1st, 1886.* R. Adkin, Esq., F.E.S., President, in the chair. Dr. C. Mordaunt Matthew and Messrs. Pawsey and Salwey were elected members. Mr. T. W. Hall exhibited a varied series of *Lycæna icarus*, Rott. Mr. W. West, some interesting forms of *Acronycta megacephala*, Fb. Mr. E. Joy, *Anesychia decemguttella*, Hb., bred from larvæ beaten near Wicken Fen. Mr. South, *Eupithecia togata*, Hb., bred from Perthshire pupæ; and a fine variety of *Melanippe fluctuata*, L., taken on a fence in the neighbourhood of St. John's Wood. Mr. Wellman, *Thecla rubi*, L., in one specimen the white spots on the under side being absent; a variety of *Lycæna icarus*, Rott.; a long series of *Eupithecia rectangulata*, L., var. *nigro-sericeata*, Haw., and a light grey variety of the same species; also a series of *Aciptilia galactodactyla*, Hb., bred from larvæ taken during the Society's excursion to Horsley on the 29th May last. Mr. Sheldon, *Angerona prunaria*, L., *Dianthæcia nana* (*conspersa*), Esp., bred from Deal larvæ; *Asthena luteata*, Schiff., and *Phoxopteryx derasana*, Hb., from Riddlesdown. Mr. Billups exhibited two living larvæ of *Boarmia repandata*, L., received by him from Mr. South, and which showed a curious arrangement of the cocoons of a species of *Panteles*; the larvæ spun a little pad of silk, then bent themselves into a bow on the twig, and the parasites began to creep out of the host, and formed their cocoons, to which the larvæ seemed to be affixed. [This curious habit was figured in the 'Entomologist,' xiii. 244.—ED.]

July 15th, 1886. The President in the chair. Mr. Wellman exhibited *Eugonia autumnaria*, Wernb., bred from ova received from Folkestone. Mr. Jager, *Dianthæcia nana* (*conspersa*), Rott., bred from larvæ obtained at Caterham, Surrey, and Teignmouth, Devon; those from the first-named locality feeding on *Silene inflata*, and those from Teignmouth on *Silene maritima*; also

Dianthœcia capsincola, Fues., *Eupithecia linariata*, Fb., *E. virgaureata*, Dbl., *E. pumilata*, Hb., *E. rectangulata*, L., and *Botys terrealis*, Fr., all bred by following the instructions given by Mr. Carrington for collecting the larvæ (Entom. xviii. 148). Mr. Gaskell, a variety of *Ematurga atomaria*, L., taken at West Wickham. Mr. J. T. Williams, a striking variety of *Abraxas grossulariata*, L.; a specimen of *Cabera pusaria*, L., irradiated with black; a pretty form of *C. exanthemata*, Scop.; a bred series of *Acidalia strigilaria*, Hb., from Folkestone; and *Dasycera olivierella*, Fb., from Foots Cray. Mr. T. Gibb, jun., *Asthena blomeri*, Curt., *Hepialus velleda*, Hb., var. *carnus*, St.; and a fine variety of *Melanippe montanata*, Bork., all taken by himself. Mr. Adkin, living larvæ of *Notodonta trepida*, Esp. Mr. South, varieties of *Boarmia repandata*, L., and a long series of *Aphomia sociella*, L., some having been bred from the cocoons found by Mr. Williams, and which were exhibited at a meeting of the Society (Entom. xix. 191), and the remainder from larvæ which had pupated amongst a bundle of sticks. Mr. South communicated some interesting notes on this species, and remarked that he imagined the group of cocoons found by Mr. Williams was the natural mode of pupation of the species, and those in the sticks being the method adopted in confinement, Mr. Billups exhibited specimens of *Cleptes nitidula*, Latr., taken at Benfleet in Essex, July 5, 1886, on the umbelliferous bloom of the common cow-parsnip (*Heracleum sphondylium*), and stated this was a very local species, and was probably the rarest of the twenty-two species comprising the family Chrysididæ; also larvæ of *Geometra papilionaria*, L., and its parasite *Apanteles rubripes*, Hal.; the larva was still living, although the parasites, to the number of nineteen, had emerged more than a fortnight before; neither had it eaten any food since then. The Secretary read a letter from Mr. Perkins, a former President of the Society, as to the capture by his nephew of a probable *Sesia andreniformis*, Lasp.; and Mr. J. T. Carrington made a communication as to the mode of working for this insect at privet-blossom.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

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IN SEARCH OF *ZYGÆNA EXULANS*.

BY W. H. TUGWELL.

ON July 7th of this year Mr. Lachlan Gibb and I started by London and North-Western route for Braemar, our principal object being to try and get *Zygæna exulans*, an insect which is extremely difficult to obtain, owing to its only habitat in the United Kingdom being situated in the midst of one of the most extensive and carefully preserved deer-forests of Scotland. Fortunately Mr. Gibb had been enabled to obtain the great favour of a pass for himself and friend into this forest; so that we started under most favourable auspices, as this vast and lovely domain is reserved for the wild red-deer alone, and the foot of a tourist or net of an entomologist rarely disturbs this mountain home of "the monarch of the glen."

My first experience of Scotch collecting commenced at Inverurie, twenty miles north of Aberdeen, where I went to spend one day with Mr. Tait, who had collected some very rare Lepidoptera in that district. After dinner we started off on an exploration of his hunting grounds, but unfortunately the day had grown wet, with strong wind, so that we had little chance of doing much amongst the Lepidoptera. All the ditches were full of the bright yellow flowers of *Mimulus luteus*, evidently thoroughly established there; and in a field hard by the pretty *Galeopsis versicolor* was not uncommon. Near the roadside the graceful *Alchemilla vulgaris* grew in some quantity.

I noticed the common harebell was much more robust, and had larger and more numerous flowers than with us in England. On skirting a boggy heath my friend pointed out the graceful *Parnassia palustris*, which grew in plenty there, although hardly in flower. Whilst going over a patch of rushes we found a few *Lyceena astrarche*, var. *artaxerxes*, at rest; also the typical *astrarche* (*agestis*), very large and finely coloured. A stone fence produced one female *Acronycta euphorbie* (*myricæ*). The rain coming on more heavily we went to a fir wood, where *Goodyera repens* was fairly common, whilst the delicate little *Trientalis europæa* was in profusion. Only a few generally-distributed moths could be disturbed off the tree boles, so we pushed on some two miles, to see the very local plant, *Linnaea borealis*. We passed some most promising-looking ground; a bog evidently held some young curlew, by the flight and cry of the parent birds. We found our plant in fair quantity, but not in flower, it being apparently a late season. Then on through a large pine wood full of bilberry, capital collecting ground, but the cold wind kept everything close. Thus ended my first day in Scotland, as the round of sugar at night was a blank, only a solitary *Agrotis exclamationis* gracing our feast.

July 9th.—I retraced my steps to Aberdeen this day, and thence by rail to Ballater, and by coach on to Braemar. The day was fairly fine, but strong wind. During the lovely ride we had kept a sharp look-out for Lepidoptera, but evidently they were not numerous. We obtained suitable rooms at Braemar, unpacked and prepared for the morrow.

The morning of Saturday, the 10th, fortunately proved fine, so we were soon up and doing. Before us we had a stiff climb, and as we passed through the belt of fir trees we found Diptera both numerous and troublesome. *Thera variata* and *Bupalus piniaria* were common, but we had no time to devote to such fry, our motto being "*Exulans!*" *Argynnis aglaia* was flying pretty freely, and it and *Lyceena artaxerxes* were secured *en route*, with an occasional *Dasydia obfuscaria*, but the ground was too rough to venture giving chase. *Scopula alpinalis* was occasionally started, as was *Emmelesia minorata* (*vericetata*), whilst *Eubolia plumbaria* was abundant. As we got more up the mountain, on the mosses, we saw a few *Ctenonympha typhon*; although fresh, most of them were chipped, doubtless by the strong wind prevailing in this elevated region.

Toiling upwards, quite a lot of interesting plants were obtained: *Polygonum viviparum* and *Pinguicula vulgaris*, with its violet-like bloom; also *Tridentalis europæa*, here much smaller than at Inverurie; whilst the commonest plant of the district was *Alchemilla alpina*. More sparingly we found the striking little *Cornus suecica*, with its black and white flowers; and on the burn-sides, *Thalictrum alpinum*, with its fern-like leaves, and *Epilobium alpinum* were in turn gathered for herbaria; then *Rubus chamaemorus* began to show itself in the cloud region, and *Tofieldia palustris* occurred sparingly on damp places. Now, as we were 2000 feet up, we began anxiously to look out for our *Zygæna*. The crowberry (*Empetrum nigrum*), *Arctostaphylos uva-ursi*, and the pretty little shrub, *Azalea procumbens*, were all common. At last, at about 2500 feet, I netted my first *exulans*, booming along in the sunshine; it was in perfect condition, and a fine example of the form *subochracea*. This put life into our working, and we scoured the hillside up and down with only very moderate success; an hour's hard work resulted in five to me and four to Mr. Gibb; but as the sky foretold a change, we worked away with a will, and by six o'clock we had each succeeded in getting a fine series. We then returned to our quarters for an eight o'clock dinner, well pleased with our first day's work at Braemar, and far too tired to try night work.

Sunday, a welcome day of rest until tea-time, after which we started off for a walk to "The Linn of Dee," seven miles out. The evening proved fine, and as we returned we saw quite a number of red-deer. Few insects were noted on wing; the only one I inspected proved to be *Larentia cæsiata*, the first I ever saw alive of this common northern species.

Monday, July 12th, opened dull and showery; however, knowing that *Zygæna exulans* was fully out, we decided to devote ten days to this part of our work. So we pushed off up the hill, the seat of our previous Saturday's labours, but found the wind on the mountain-tops extremely cold and strong; consequently, although we worked fully as hard, the result was comparatively very poor. When the too frequent rain-showers were driving over us, we were glad to cover ourselves up with our waterproofs for shelter and warmth. It was surprising to see how soon *Zygæna exulans* utilized every short gleam of sunshine, evidently

being quite alive to the fact that in their elevated home they must waste no time. A few moments after a hard cold rain and they would fly, if only a glint of sun lasted a few moments.

Tuesday, the 13th, was a repetition as to weather and captures.

Wednesday, the 14th, proved so rough and cold that we determined to do a little mountain climbing up to the distant snowfields, so started for Ben Abord, which is one of the highest of the Grampian range of hills. Our path was a steady rise for some eight or nine miles up a charming glen, with a rapid brawling burn by our side. Several plants were obtained, such as *Saxifraga stellaris*, which looked very pretty by every rill, and *Saxifraga azoides*, more sparingly so. *En route* we saw all the British species of the genus *Vaccinium*, viz., *V. myrtillus*, *V. uliginosum*, *V. vitis-idaea*, and the very delicate little *V. oxycoccus*. A few small plants of the curious *Botrychium lunaria* were noticed, and as we neared the base of Ben Abord we found the dwarf birch *Betula nana*, fairly common at one spot, whilst by the burn-side *Arabis petraea* grew freely. A few plants of *Gnaphalium supinum* were found, and *G. dioicum* was generally common. We now commenced a very stiff ascent of about another 2000 feet to the top of Ben Abord: as we neared the snow we saw several ptarmigan (*Lagopus mutus*). These birds breed on this elevated ground in some numbers. Near the summit we saw a brood of the young; the poor old hen went through some most fantastic antics to draw us away from her chicks, which, needless to say, we had no desire to molest. In a sheltered spot we took our first and only *Psodos coracina* (*trepidaria*) which was in a most tattered condition, so we presumed we were too late for this species. Here, *Azalea procumbens* was in full flower; also *Rubus chamaemorus*, both of them being over at lower ranges. We were now close to large and deep fields of snow, the wind bitterly cold, but the ground was covered with patches of the lovely little *Silene acaulis*, quite a gem set in this desolation. Fortunately for our object the air was quite clear, and we had a most extensive and impressive view of miles of this grand Grampian range. Still we were soon glad to seek a lower and warmer region. Passing over a large tract of crisp snow to a little burn, we found *Caltha minor*, creeping and rooting at its joints in the mud; although only a var. of *C.*

palustris, it is very unlike that plant. What surprised me greatly was to come upon quite a bright patch of the common sea-thrift, *Statice armeria*; curiously, this was the only spot I noticed this plant in the district. On our journey back, for a short time, insects began to fly pretty freely, and we netted *Larentia salicata*, *Acidalia fumata*, *Eupithecia nanata*, &c., but rain coming on, we had eight or nine miles to trudge in the wet.

Thursday, 15th.—It poured with rain and blew half a gale, so we had to content ourselves with setting up all our previous captures.

Friday, 16th.—The wind was still so strong and cold that collecting in such a mountainous district was almost impossible, so that we went off on a botanical excursion to the station of one of our prettiest and rarest plants, *Astragalus alpinus*, which grows on a grassy hillside some seven miles out of Braemar. Our path for a mile or so ran by the Dee-side. Here we noticed, flying about, a number of the pretty oyster-catchers. They nest here, as does the curlew; both species evidently had young ones near. The first plant new to us observed was *Pyrola rotundifolia*, not yet in bloom, and *P. secunda* occurred farther up the glen. We found *Astragalus* in splendid condition and in some plenty, but extremely local. *Dryas octopetala* was found, but very little bloom; plenty of plants. *Habenaria viridis* was fairly common in one spot, whilst a few plants of *Saussurea alpina* and *Saxifraga hypnoides*, var. *platypetala*, were collected from some craggy rocks near. One could scarcely believe it was mid-July, as it was so cold our finger-tips fairly ached, and the lobes of my ears were graced with two fine chilblains. A few good Coleoptera were picked up as we retraced our steps; and from the bottoms, on the mosses, we boxed off a few *Cænonympha typhon*, at rest. We felt we had not wasted our day, as we had collected quite a lot of good alpine plants.

Saturday, 17th, proved fine and hot, so we were soon wending our way for *Zygæna exulans*. We worked all day very hard for this local species; very little else was to be obtained on the ground. Mr. Gibb was fortunate enough to net a female *Pachnobia hyperborea (alpina)* flying in the afternoon sunshine. We had hoped to have met with *Crambus furcatellus*, but did not; and although we searched very closely, we only found one pupa-case of *Z. exulans*, and that was attached to the underside of a branch of crowberry.

Had it not been for our fine series of the one special insect, our captures would have been poor indeed in the region of Braemar.

Monday, 9th.—Sent off our luggage and setting cases by coach, *via* Dunkeld for Blair Athole, we taking a trap as far as Bynoch Lodge, and from that point walked through the wild and romantic Glen Tilt. The weather was fine for touring, not being too hot, with a fresh head-wind blowing. The first five miles, from Bynoch to head of the glen, the road or bridle-path was of the worst possible description, through heather, over loose rolling stones, more like the dried-up bed of a mountain burn than a path, and this made the journey very trying; but when we entered the glen proper, it was a trifle better. The scenery was very striking, but wild and bare-looking; numerous little burns, rushing down the mountain sides, like lines of silver glistening in the sun. *Saxifraga azoides* here grew in great profusion. The pretty blue *Gentiana campestris* was common, and by the Tilt-side we first met with *Oxyria reniformis*.

Insect-life was by no means prolific; only *Scopula alpinalis* and *Emmelesia minorata* were captured: the wind was too strong. As we neared Forest Lodge, about half-way through the glen, Nature began to wear a verdant garb. In place of the bare hill, or only scantily covered with stunted heather, &c., the glen looked beautifully green and fresh. Thousands of long-horned sheep were being collected for shearing, by kilted shepherds, aided by their clever colley dogs, together making a most beautiful picture. In a sheltered nook we found *Emmelesia albulata*, but *passé*. A drink of milk at the Lodge was very acceptable, and Mr. McDonald showed us seven live foxes he had caught. The aroma from them was, to say the least, strong, and the poor caged brutes seemed very unhappy as they slunk about their stable. The road from Forest Lodge to Blair Athole was first-rate, so we trudged along briskly, and reached the hotel after a trying walk of nine hours.

Tuesday, 20th. — Left Blair Athole *via* Struan for Kinloch Rannoch, where we found capital quarters at Mrs. McDonald's, Bun Rannoch Arms. As we came along we had a beautiful view of Schiehallion, it being fine and bright; but that was our only glimpse of it, as it changed to cloudy wet weather during our stay, entirely marring our hope of collecting, blowing half a gale most of the time.

We certainly saw the well-known Black Wood, but under the worst possible condition; a few common Lepidoptera were collected from the tree-boles, such as *Larentia cesiata*, *Thera firmata*, *Ellopiæ prosapiaria* (*fasciaria*), and the local form of *Boarmia repandata*; but the undergrowth was so soaking wet that nothing would rise from it, and we had to content ourselves by imagining what a nice lot of things we should have had, given fine weather. A few interesting plants were collected in Rammoeh, viz., *Pyrola minor*, *Carduus heterophyllus*, and *Comarum palustre*; and from the stony banks of the River Tummel, *Thalictrum minus* var. *montanum*, and *Oxyria reniformis*.

Although during our run of seventeen days we had very bad weather for entomological work, still we left Scotland feeling we had spent a holiday that will leave a pleasant memory of our trip to the Grampians for many years to come.

6, Lewisham Road, Greenwich, S.E., August 10, 1886.

DESCRIPTION OF A NEW CECID.

By PETER INCHBALD, F.L.S., AND R. H. MEADE.

Cecidomyia clausilia, Bouché.

AFTER not a few fruitless attempts, I have succeeded in rearing the Cecid that affects one of our British willows (*Salix alba*), and lives in those little half-moon pads on the margins of its lanceolate leaves, as figured by Bremi, of Zurich, in the 'Transactions of the Swiss Natural History Society,' in 1847. Bremi did not succeed, it appears, in rearing the imago; but he tells us that a single larva tenants each pad, and thus he supplies an important link in its economy. A previous notice of this Cecid was given us by Bouché, of Berlin, in 1834, so that priority of name naturally rests with him. Since 1847, H. Loew, Kaltenbach, and Rudow have given some particulars in relation to the home of the larva. In our own time Bergenstamm (1876) remarks in his 'Synopsis,' in relation to unknown and undescribed imagines:—"These leaf-rollings are the work of a *Phytoptus*, and thus the Cecid-larvæ may be looked upon as inquilines." It may be so, but it is not my experience. I may

add that I have reared it from the pads, in which I find the pupa enclosed in a flossy shroud, in considerable abundance, both males and females, fully fifty having emerged in the first half of August. Each morning, early, I find them in my glass-topped boxes, and have learned to recognise the male by its merry, restless flight. The female is more staid and sober in its life and movements, the oviduct being prominently exerted and coloured, just as Mr. Meade, whose diagnosis is appended, describes it to be. This present Cecid would seem to frequent, perhaps exclusively, the leaves of the white willow (*S. alba*), whereas a cognate species affects the osier willow (*S. viminalis*). This is also figured by Bremi; but in the latter case the margin is continuously rolled in, whereas in the former it is only interruptedly so.

PETER INCHBALD.

Fulwith Grange, Harrogate.

CECIDOMYIA CLAUSILIA, *Bouché*.

Nigra, abdomine rufo-fusco. *Antennæ* 14-articulatæ, mas et fœm., articulis mare petiolatis, fœmina sessilibus. *Thorax* niger, fasciis cinereis. *Scutellum* pallidum. *Oviductus* elongatus, sine lamellis, articulis duobus primis supra nigris, subtus albidis, articuloque terminali flavido. *Pedes* pallide-fusci, albo-pilosi. *Alæ* claræ parce hirtæ venis cubitalibus rectissimis paulo ante apicibus terminatis. *Halteres* nigro-capitati. Long., mas $1\frac{1}{4}$, fœm. $1\frac{1}{2}$ mm.

Head black, with a reddish spot and a small tuft of white hairs on the face. Palpi pale. *Antennæ* brown, about two-thirds of the length of the body in the male, and about one-third in the female; 14-jointed in both sexes; joints petiolated, and verticillated with white hairs in the male, sessile in the female. *Thorax* black, striped and shaded with grey; sides behind the bases of the wings, as well as the roots of the wings themselves, red. *Scutellum* whitish yellow. *Abdomen* reddish brown, covered with dark scales arranged in irregular transverse lines; body of male darker than that of female; forceps small and black in former; oviduct in latter long and slender, without lamellæ, having the first two joints black on the upper parts, but pale beneath; terminal joint, which is equal in length to the two others (when the oviduct is protruded), yellow. *Halteres* with

pale stalks and black knobs. Wings clear, only tenderly haired; veins brown, tinged with pink; cubital straight in its whole course, and terminating a little before the apex of the wing; anal vein bent in the middle where the lower branch is given off, which extends in a gentle and even curve to the lower border. The wing closely resembles that of *Cecidomyia iteophila*, figured by Winnertz in Tafel ii., No. 3, but the anal vein is less bent. Legs pale brown, thickly clothed beneath with white hairs; joints and ends of tarsi pink.

R. H. MEADE.

PROCTOTRYPTES ATER, NEES, BRED FROM LARVA OF
CREOPHILUS MAXILLOSUS.

By F. W. FROHAWK.

ON October 15th, 1883, I found a larva of *Creophilus maxillosus* lying on a gravel-path, which on closer examination proved to be just dead, and with nine pupæ of *Proctotrypes ater* protruding from its under surface. I then made a sketch of the somewhat unusual-looking mass of insects, from which the accompanying drawing is taken.



PROCTOTRYPTES ATER AND HOST.

The nine *Proctotrypes ater* pupæ were affixed to their host in the curious position shown in the figure, apparently attached only by their anal extremity, and without any cocoon whatever. They were pale ochreous-brown in colour, with the head and thorax dark brown. Some time after, on looking into the box in which I kept them, I found they had all emerged and the perfect insects were dead. Two or three were wingless, but as I did not notice at the time any loose wings in the box, it would be interesting to know from what cause the wings were missing. The perfect insect has the head, thorax, body and antennæ of a deep shining black, and the eyes bright sienna-brown.

Park Place, Eltham, August, 1886

LOCALITIES FOR BEGINNERS.

BY JOHN T. CARRINGTON, F.L.S.

No. X.—ST. GEORGE'S HILLS.

THE excursion I now propose to take my readers—in print—commences from Waterloo Station of the London and South Western Railway, whence we take our tickets for Weybridge, which is nineteen miles from London. There are frequent trains some of which run through in about half an hour without stopping, with return trains up to nearly ten o'clock at night.

On leaving the arrival platform we ascend a number of steps, for the station is in a deep cutting, which at once tells us that the subsoil of the neighbourhood is deep sand. Arrived at the top of the stairs, we see before us a delightful bit of common-land, covered with thick and long heather (*Calluna*), small Scotch firs, and occasional birches, a most encouraging reception for the entomologist. This common extends also north of the station, where there is some broom, much frequented in their season by the larvæ of the commoner of the two *Depressaria* which affect that shrub. Near this will be seen the only house in the neighbourhood where substantial refreshment can be obtained, the "Hand and Spear" hotel, which is close to the railway-station. Among the rough grass on this northern or Weybridge side of the common, one of the more local species of the genus *Crambus* is said to occur. Excepting this bit of ground, there is no other place on that side of the railway which is worth spending time upon, while so much, and better, may be found in the direction we will now take.

Imagining ourselves again on the south side of the railway-bridge, we take the right hand of the two roads opposite to us, and leading across the common. Following this we come to a low wall bounding a fine fir wood on our right, while on our left are a series of villa residences so characteristic of the wealthy class of people inhabiting the neighbourhood. Continuing forward we come to some large oak-trees, where in early autumn the acorns may be picked up and saved for rearing the imagines of *Carpocapsa splendana*, the larvæ of which are feeding on the earliest-fallen acorns.

As soon as we have passed the last of the villas on the left,

we shall see a gate on the same side, with gate-keeper's lodge. This we enter, and find we are within the beautiful domain of St. George's Hills, as will be discovered by seeing a notice-board on which are painted the rules for regulating the conduct of the public when using the woods. These at first appear stringent, but are by no means unreasonable, and, so far as I have experienced in many visits to the locality, do not in any way interfere with the entomologist who respects the property of his host, for such, for the time being, is the owner who allows him to roam through his woods.

There are several paths diverging from this entrance, all of which are pleasant enough, but we will follow the one opposite to us through the big fir-trees which constitute this portion of the wood. We will not loiter here, but pass forward, all the time keeping a sharp look-out for those insects which delight to rest on the boles of the fir-trees. Among the heather so luxuriantly growing beneath the firs we shall shortly see many of the great ant-hills made by *Formica rufa*, and so dear to the coleopterist who is proof against the irritating stings of the tenants he is sure to evict in his search for the special beetles which inhabit these ant-hills. We have now passed a ride on the right a few hundred yards from the gate, and go on until we come to a valley where our path meets one crossing it at almost right angles. Taking our right-hand path, we ascend the hill opposite, and work our way upwards, all the time making for the "Swiss Cottage," a picturesque little house near the middle of the wood, where tea and cakes are to be had. This may be considered our rendezvous, for much of the best collecting should be found to the north-east of this, where lies a considerable space of high ground with a very mixed herbage and rich undergrowth, and where the woodland partakes of open ground, with sallow, hawthorn, and other shrubs and trees covered with festoons of honeysuckle. Many a long day may be profitably and happily spent around here, by those especially who delight in the smaller moths, as well as the Macro-Lepidoptera.

St. George's Hills are largely dedicated to the growth of conifers in the region of the "Swiss Cottage," and many rare and really handsome trees of that group may be seen, including some giant monkey-puzzles (*Aurucaria*). Of course Scotch fir abounds all round, but we shall find some immense spruce firs

with large crops of the long and graceful cones, which should contain larvæ of *Eupithecia togata*. These are to be found while the cones are still green in colour, by the aid of a field-glass, which will reveal the frass thrown out by the larvæ, still attached to the unripe cone. To obtain these, however, is quite another matter, and the object is best attained by sending up a small but plucky boy, who may gather them. It may be well to consult the leading woodman upon this subject before attempting the feat, in case a false value be placed upon our proceedings if the small boy is inconveniently discovered at the top of the tree. There are parts of the woods where detached oaks and birches abound, rewarding, in spring, those who search the former for *Amphidasys strataria* (*prodromaria*), many fine examples having from time to time fallen to my lot. These woods are ever pleasant to wander in, but to me especially so in spring-time, when the delicate tints of green of the early leafing birches gladdens the eyes, in contrast with the rich dark green of the firs, and when *Brephos parthenias* merrily flits over the blooming salallows to the joyous sound of multitudes of humming bees.

To the south-east of the "Swiss Cottage" we find a road down the hill-side, bordered with large laurel-bushes; if we follow this we shall in due time come to some collecting-ground of quite another character, where the heath disappears and is replaced by more marshy ground covered with long grass, quite like a Lancashire moss, barring the absence of cotton-grass. Round this moss-like locality is a road on either side, which leads us to another gate, and the one nearest to Cobham Street, which is about half a mile distant, and where at the larger of the two 'White Lions' will be found an interesting old Surrey inn with carefully kept garden, worth visiting. This inn is about four miles from Weybridge Station, but there is one nearer by a couple of miles, at Stoke d'Abernon.

In St. George's Hills one may find plenty to do for a whole day, and get lost, too, if we lose our bearings; but it may be that we should like to know more about the neighbourhood, so we will return to the lodge-gate next Cobham. Here we find that four roads meet; that to the left is to Walton-on-Thames, a very pretty walk; before us is to Cobham; behind us, outside the wood, to Byfleet and Weybridge; and to the right is to the Portsmouth High Road. This we will follow, and at the end we shall

find a large park, with a very long park-fence, worth examining for moths if the wind be from the right direction. At the junction with the high road we turn to the right and follow the high road, with perhaps sundry divergences into the heaths, which are open and free to the collector. Then we shall pass a road bearing to the left, leading to Ockham, where the inn is the "Hautboy and Fiddle." We continue, however, along the high road, and shortly come to a miniature lake to the left of the road. This is the Hut Pond, and is quite a respectable sheet of water; big enough to boat upon, to fish in, and to hunt for *Hydradeephaga*, all of which sports may be arranged for on application at the "Hut" tavern, on the opposite side of the road. This again becomes an excellent head quarters for many days work, for it is perfectly surrounded by good collecting-ground, and excursions may be made in many directions. One cannot well get accommodation to stay at the "Hut," though that has been accomplished, when entomological ardour held luxury in wholesome contempt. Behind the "Hut," a little to the westward, is a very wild country, considering its proximity to the Metropolitan district, and here snipe rear their young every year, and I recently found a young brood of woodcocks. There are many marsh plants in this district, one of the prettiest being the little sundew, *Drosera rotundifolia*. Heath-loving moths are in abundance, such as *Eupithecia nanata*, *Anarta myrtili*, and *Agrotis agathina* may be found by searching the flowers of the heather by lamplight, with *Noctua neglecta* and many others useful for exchange. For this sort of work I should prefer the ground to the left of the road leading to Ockham, as it is dryer and more pleasant to work. The best time to search the heather-flowers is before they are generally out, and only in patches, for when the flowers become general, the space to search is so much more considerable.

If we take the left side of the pond and walk a little southward from the "Hut," we cross the Ockham Road and bear right away to the left: this will bring us to some woods with an abundance of rhododendrons, a sight worth seeing when in flower. Here I have seen the wild-flying *Macroglossa fuciformis* dipping its long proboscis into the deep flowers of these shrubs. This wood is, I suppose, private property and duly preserved, though I have not seen any one in it to ask me to retire, so I propose to continue my visits until I am so requested.

This district is so extensive from an entomologist's point of view that many visits must be taken before it is fully explored; for, given a desire to collect the marsh-loving *Pyrales* and other insects, by passing though Byfleet to the west of St. George's Hills, we come to the meadows near the River Wey and on to the canal-bank, where collecting of an entirely different character is to be found. This makes a pleasant excursion, but not so picturesque as our walks through the woods of St. George's Hills, which for retired wildness are unequalled by anything else within easy reach of London.

Savage Club, Savoy, London, W.C., August 24, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PAIRING OF *EPINEPHELE IANIRA* AND *E. HYPERANTHES*.—Whilst collecting at Brockenhurst, on 16th July, I netted the above-mentioned insects, male and female, in the order given, *in coitû*. I showed them alive to my friend Mr. Jenner Weir, who said that he had never observed those two insects to pair before, and judged it worthy of mention.—PERCY RENDALL; 20, Ladbrooke Square.

NON-OCCURRENCE OF SPRING BROOD OF *LYCÆNA ARGIADES*.—As many lepidopterists are interested in the occurrence of *Lycæna argiades*, it may be worth noting just now that I and several others have been working on and near the spot where we found a male and female last year, at intervals, since June 19th, but, up to last night, without success. I am not myself so much surprised at this, considering how bad a season it is (at least in this district) for Lepidoptera in general, and especially for the genus *Lycæna*. Up to yesterday (20th inst.) I have not seen fifty specimens of both *L. icarus* and *L. ægon*. I shall continue to look for *L. argiades*; and as *L. icarus* is still coming out, it may yet put in an appearance.—O. P. CAMBRIDGE; Bloxworth Rectory Wareham, August 21, 1886.

XANTHIC VAR. OF *EPINEPHELE TITHONUS*. — Mr. T. H. Waring has shown me a curious xanthic variety of this species, in which the whole of the dark brown of a normal specimen is replaced by cream-colour. The ocelli have the black replaced by

pale brown. It was taken at Fowey, Cornwall. Similar varieties of this and *E. ianira* have been recorded, but can anyone suggest the cause of their appearance? Do they breed true, or affect any particular localities?—T. D. A. COCKERELL; Bedford Park, W., August 11.

SESIA ICHNEUMONIFORMIS IN CAMBRIDGESHIRE. — On July 18th I captured a female *Lophopteryx cuculla* (*cucullina*) near here, which laid a good batch of eggs, from which I am rearing larvæ. Also, on the same day, I took a specimen of *Sesia ichneumoniformis*. To-day I have taken two more of the same *Sesia*. Most moths seem to be at least a month late.—G. E. CRALLAN; Cambridgeshire Asylum, Fulbourn, near Cambridge, August 20, 1886.

NEMEOPHILA PLANTAGINIS DOUBLE-BROODED.—Is *Nemeophila plantaginis* usually double-brooded? I found, as I always do, great numbers on the sandy warrens at my home near Appleby, Lincolnshire, and bred many moths. These laid ova in due course, and I have now another batch of larvæ, which will soon be full-fed. I have not forced them in any way.—ELIZABETH CROSS; Dalchosnie, Rannoch, Perthshire, August 15, 1886.

APAMEA CONNEXA IN SCOTLAND.—Last autumn, when staying with my friend Mr. Watson, he asked me the name of a moth he had taken sitting on the trunk of a tree on the Holy Loch, early in August, 1885, along with *Sarothripus undulatus* (*revayana*). It proved to be a very fine *Apamea connexa*. I think the original British locality for this species is near Barnsley; and his Scotch locality is interesting.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 26, 1886.

CIDARIA SIDERATA IN AUGUST.—On the 4th of this month I boxed a fine, brightly-coloured male specimen of *Cidaria siderata* (*psittacata*) at rest on a bank near here. Is not this an unusually early appearance of this insect? — L. SURRAGE; 2, The Esplanade, Minehead, Somerset, August 12, 1886.

IS *TIMANDRA AMATARIA* DOUBLE-BROODED?—On July 1st last I captured three *T. amataria*, one of which laid ten ova (of a deep red colour) on the 7th; they all hatched on the 14th July. On August 2nd one larva spun a very slight web between the dock leaves, upon which I fed them, and turned to the pupa on

leucanthemum, and on examining the plants found about a score the 4th, which disclosed a perfect male imago, August 14th, early morning. Another larva spun up, August 3rd; turned to pupa on the 5th, early morning; and the moth emerged, August 15th, early morning, also a fine male. The remaining eight larvæ are now apparently hibernating, and are about three parts grown. From the above it will be seen that they were only seven days in the ova state, only twenty and a half days in the larval, and ten days in the pupa state; in all being thirty-eight days for the completion of the transformations, from the day the ova were deposited to the emergence of the first perfect insect, which I think must be unusual for *T. amataria*. Never having observed a second brood before, I place these facts on record.—F. W. FROHAWK; Eltham, Kent, August, 1886.

[It is by no means unusual in the case of hibernating larvæ for individuals from a batch of ova laid by one female to outstrip the others in growth and to appear the same autumn, especially if kept warm and liberally fed.—ED.]

DICRORAMPHA DISTINCTANA ON THE ESSEX SALT MARSHES.—When collecting on the sea-wall by a stream in July last year, I disturbed two Tortrices, which I secured. On comparing them with specimens of the genus *Dicrorampha* in my collection, I was unable to identify them with any, so put them aside for future determination. When my friend Mr. C. G. Barrett called here lately, I drew his attention to the specimens, which he said he believed were the above-named species. On forwarding them to him for comparison with his continental types, I had the pleasure of learning that they were the true *Dicrorampha distinctana* of Heinemann. The species is closely allied to *D. plumbagana*, but the markings are more silvery. I tried for it this year, but the weather being unfavourable I was unsuccessful.—W. MACHIN; 29, Carlton Road, Carlton Square, E., August 8, 1886.

DICRORAMPHA DISTINCTANA.—In 1882 I recorded the capture of two examples of a *Dicrorampha*, under the name of *distinctana*, Hein. (Entom. xv. 110). Since that date I have each year had sent me various plants from the locality in North Devonshire, where the insects referred to were taken, but until the present year had not been enabled to elucidate their life-history. On the 24th of May last I received a batch of *Chrysanthemum*

of larvæ feeding in the shoots and buds, after the manner of *Dicrorampha consortana*. Subsequently comparing a full-grown larva with a short description of the larva of *D. consortana*, taken by me at Shanklin, Isle of Wight, in 1879, I found that it agreed exactly therewith. Profiting by my experience with *consortana* larvæ in the Isle of Wight, I selected all the infected shoots of *Chrysanthemum* and placed them in tins. The first imago emerged on July 15th and others at intervals, to the number of fourteen in all between that date and August 7th. The specimens are identical with the two captured in North Devon; and although their brighter ornamentation and more distinct character of marking would seem to separate them from *D. consortana*, still the fact of the larvæ from which they were produced being in structure, appearance, and habit precisely like those of *consortana* proves them to be this species. It follows, then, that if this form of *consortana* is identical with the *distinctana* of Heinemann, as, on the authority of Mr. C. G. Barrett, it is stated to be, the insect should be labelled in our collections as *Dicrorampha consortana* var. *distinctana*, Hein.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood.

CHRYSOCLYSTA BIMACULELLA AT WINDERMERE—On July 1st, whilst sweeping for *Nepticula intimella* amongst the willows at Windermere, I was astounded when I saw in my net a magnificent specimen of this lovely insect. The sun was bright and hot, and a good stiff breeze on at the time made it difficult both to see and to get it to settle in the net. It seemed as if it knew it was specially wanted, and took all the breath I could spare to keep blowing it back. When boxed, I remembered the fate that befel some *Lampronia luzella* a day or two before, so I chloroformed it, and secured it safely with a pin. On the 5th I had another hard day, and took a worn female and a gem of a male. All were swept off the willows. It is not every day to be met with, for I spent four days more without success.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 16, 1886.

GELECHIA OSSELLA AT ARNSIDE.—Of this rare species I took one specimen each at Arnside and Grange-over-Sands, in July, 1880 and 1883. I had only one old specimen of Wilkinson's. Thanks to Mr. Sang for detecting them mixed up with *Cleodora cytisella* when he was here.—J. B. HODGKINSON.

REARING LARVÆ.—Mr. St. John's plan (Entom. 164) for rearing larvæ is very good. Allow me to suggest to him the desirability of placing some fine moss in the bottom of the glass, say one inch; on the top of that, one inch of fine sand; and above that, one inch of fine moss, such as that found growing on old bushes in hedges (the same as the bird-dealers sell in small bags in the breeding season). The moss should be scalded with hot water, to kill lurking enemies, and then dried. This would come up to the level of the top of a two-ounce squat bottle, a size I have used for the last twenty years, which should be inserted into a tube, as suggested by Mr. Carrington; zinc in preference to tin, for the latter rusts very quickly; and from experience I find stuffing the mouth of the bottle with fine moss far preferable to blotting-paper.—G. C. BIGNELL; Plymouth.

ENEMIES TO THE ENTOMOLOGIST.—Bats, nightjars, and toads have been so long recognised as the sworn enemies of those who go sugaring for moths, that I venture to draw the attention of those who are interested in the above science to a hitherto unrecognised foe, as far as my reading goes. Whilst sugaring last year at Lyndhurst, we were much troubled by the long-tailed field-mice (*Mus sylvaticus*) that frequented our sugared trees, as we thought, at the time, attracted by the luscious liquid we used. Though we noticed that there were never any moths on the same trees, we simply thought that they frightened away the insects, and waged war to the knife against them, finding they only returned when scared away. This year, however, whilst sugaring in Sussex, my greatest fears were confirmed, for one *Mus*, as I was standing quite still with my light thrown full on the sugared bark, came fearlessly into the circle of light, ran round to my side of the tree, sat up, looked at me and then at the tree trunk, up which it ran, and seized a luckless specimen of *Miana strigilis* in its mouth, and ran off with it. After that, I saw at the bottom of more than one of my trees the remains of moths, whose bodies alone had been eaten by the insectivores in question.—PERCY RENDALL; 20, Ladbroke Square, W., Aug. 8.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *August 4th*, 1886. Prof. J. O. Westwood, M.A., F.L.S., Hon. Life-President, in the chair. The following gentlemen were elected Fellows, *viz.*:—Lord Dormer, Mr. J. H. A. Jenner, Mr. James Edwards, Mr. Morris Young, Mr. F. V. Theobald, Mr. E. A. Atmore, and Mr. William Saunders, President of the Entomological Society of Ontario. Mr. Theodore Wood exhibited and made remarks on the following Coleoptera, *viz.*:—An abnormal specimen of *Apion pallipes*, with a tooth upon the right posterior femur; a series of *Langelangia anophthalmi* from St. Peter's, Kent, taken in decaying seed-potatoes; a series of *Adelops Wollastoni* (Janson), and *Anommatus 12-striatus*, also from decaying seed potatoes; and a series of *Barypeithes pellucidus* (Boh.), from the sea-shore near Margate. Mr. Wood also exhibited, on behalf of Dr. Ellis, of Liverpool, a specimen of *Apion annulipes* (Wenck). Prof. Westwood exhibited five specimens of a species of *Culex*, supposed to be either *C. cantans* or *C. lateralis*, sent to him by Mr. Douglas, who had received them from the Kent Waterworks. It was stated that they had been very numerous in July last, and that persons bitten by them had suffered from "terrible swellings." Prof. Westwood also exhibited some galls found inside an acorn at Cannes in January last. Mr. Billups exhibited a male and female of *Cleptes nitidula* (Latr.) taken *in copulâ* in July last, at Benfleet, Essex, on the flowers of *Heracleum sphondylium*. He stated that it was probably the rarest of the twenty-two known species of British *Chrysididæ*, though it had been recorded from the New Forest and from Suffolk. Prof. Westwood, the Rev. W. W. Fowler, Mr. Fitch, and Mr. Champion, made some remarks on the species. The Rev. W. W. Fowler announced that a series of specimens of *Homalium rugulipenne* (Rye) had been received from Dr. Ellis, of Liverpool, for distribution amongst members of the Society. Mr. White exhibited a group of three specimens of *Lucanus cervus* consisting of a female and two males. The female was *in copulâ* with one of the males, which, while so engaged, was attacked by the second male. Mr. E. A. Fitch read a paper, communicated by Mr. G. Bowdler Buckton, "On the occurrence in Britain of some undescribed *Aphides*." The paper was

illustrated by coloured drawings. Prof. Westwood read a paper "On a Tube-making Homopterous Insect from Ceylon." Mr. Theodore Wood read a paper "On *Bruchus*-infested Beans." A discussion ensued, in which Prof. Westwood, the Rev. W. W. Fowler, Messrs. Fitch, Weir, Trimen and others took part.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 5th, 1886. J. Jenner Weir, Esq., F.L.S., in the chair. Messrs. A. W. Spanton, W. Manger, and W. Powley, M.A., were elected members of the Society. Mr. W. West exhibited *Eugonia autumnaria*, and bred specimens of *Oeneria dispar*. Some discussion took place as to the disappearance of this insect in the wild state from this country, in the course of which Mr. Chaney stated that he once took a specimen in a wood near Chatham about thirty years ago, and a friend of his, Mr. J. J. Walker, took a specimen about fifteen years ago at Chattenden. Mr. Wellman exhibited specimens of *Dianthæcia albimacula*, from Folkestone; series of *Epione parallelaria* (*respertaria*), and *E. apiciaria*. With reference to *E. parallelaria* Mr. Weir remarked that he understood it would probably become extinct in this country, as the place where it was obtained was likely to be cultivated. Mr. Carrington said that, as an old captor of this insect, he did not think that its extinction was immediately probable; and he contributed notes on the locality and habits of the species. Mr. Goldthwaite exhibited a singular variety of the male of *Ematurga atomaria*; a striking xanthic variety of *Lycæna minima*, from West Horsley; dark forms of *Xylophasia monoglypha* (*polyodon*), from the Lake District, which he stated was, in consequence of bad weather, almost the only result of twelve days' work. Mr. C. Oldham, a large number of varieties of *Abraxas grossulariata*, bred from pupæ found in Cambridgeshire. The series showed a larger range of variation than is usually seen among a quantity bred haphazard. Several members contributed notes of their experiences in breeding varieties of this species. Mr. J. J. Weir exhibited five beautiful varieties of *Argynnis paphia*, among which was a melanic variety of *paphia* properly so-called; and a very green form of the variety *valezina*. Mr. J. Carpenter exhibited a larva of *Heipialus virescens* from Titatapu Bush, near Rotorna, New Zealand, with a very fine example of the well-known fungus, *Cordiceps robertsii*,

growing from the larva. Mr. West, of Greenwich, several species of rare northern Coleoptera taken by Mr. Tugwell in Braemar. Mr. Billups exhibited male and female specimens of *Cleptes nitidula*, and read a short paper with reference to his exhibit. He also exhibited *Chrysis succincta*, taken at Chobham, on July 28th, on the bloom of the wild carrot (*Daucus carota*), and stated that this rare species of the *Chrysidide* was only recorded as having been taken some fifty years since, by Messrs. Dale and Rudd in Hampshire, and the late Mr. Fred. Smith had only met with it twice, and then in the same county.

August 19th, 1886. The Vice-President in the chair. The Rev. H. C. Lang, M.D., F.L.S., and Mr. J. M. Adye, were elected members. Mr. Sheldon exhibited bred series of *Eupithecia pimpinellata*, *Conchylis dilucidana*, *Grapholita geminana*, *Ephippiphora cirsiana* (bred from thistle-stems), *E. fænella*, and some interesting forms of *Xanthosetia zægana*, from Hackney Marshes. Mr. Wellman, a series of *Acidalia emarginata*, bred from ova. Mr. J. J. Weir, xanthic varieties of *Erebia epiphron*, *Epinephele ianira*, *Satyrus semele*, *Cænonympha pamphilus*, a very pale *Polyommatus phlæas*, and a light specimen of *Eubolia bipunctaria*. Mr. J. A. Cooper, *Erastria venustula*, *Stigmonota roseticolana*, a long series of *Argyrolepis badiana*; with reference to this insect Mr. Cooper stated that both Mr. Stainton and Mr. Merrin gave the food-plant as the roots and stems of burdock (*Arctium lappa*), but he had searched carefully and had been unable to find any larvæ, either in the stems or roots, although he had found them plentifully in the seed-heads of the plant from which those now exhibited were bred. This gentleman also exhibited varieties of *Spilosoma menthastri* and *Phorodesma smaragdaria*, bred from larvæ found in the Essex salt-marshes. Mr. Jobson also exhibited *P. smaragdaria*, the larvæ having been obtained from the same locality; *Erastria venustula*, bred from ova; and *Lobophora sexalidata*. Mr. J. T. Williams, *Ilithyia carnella*, an almost albino variety of *Acidalia bisetata*; and a variety of *Larentia olivata* having the whole of the base of the wings suffused as far as the band. Mr. Helps, *Boarmia repandata*, var. *conversaria*. Mr. C. Oldham, varieties of *Calymnia trapezina*, and examples of the second brood of *Lycæna argiolus* and ova. Mr. Mera, pale and dark varieties of *Abraxas grossulariata*. Mr. Frohawk, *Timandra amataria* bred from ova laid on the 7th

July last, and coloured drawings of the larva and pupa. Mr. Goldthwaite, a bred series of *Scotosia vetulata*; black forms of *Eupithecia rectangulata*; and a long series of *Nudaria mundana*. —H. W. BARKER, W. A. PEARCE, Hon. Secs.

REVIEWS.

The Naturalist's Diary: a Day-book of Meteorology, Phenology, and Rural Biology. Arranged and edited by CHARLES ROBERTS, F.R.C.S., &c. London, 1886: Swan, Sonnenschein & Co.

THIS is a spirited stride away from the well-worn track followed by ordinary diary-makers. So marked indeed is the difference that Mr. Roberts's system is worthy of serious study and lengthened consideration. It is no mere series of pages, though there is a page per diem for entering the names of animals observed on a particular day; but a carefully prepared guide for scientific record of observations, based upon the study of phenology, and the "interdependence of a wide range of natural phenomena;" in other words, examining the relations which exist between the meteorological and organic phenomena around us and their dependence on each other.

"Calculations are given which show the degrees of shade temperature above 42° F. (the assumed zero of vegetation) for each day, and the accumulated temperature from day to day throughout the year; and the rainfall is dealt with in a similar manner. In this way, and as far as the average of twenty years can be trusted, the heat and moisture equivalents of about three hundred British wild plants and trees have been determined; and these plants have become in their turn standards for estimating the same conditions in other plants which have not been under observation, but which grow and blossom under similar atmospheric and physical surroundings. Thus the plants which blossom on May 4th required an accumulated temperature (above 42°) of 479° F. and an accumulated rainfall of eleven inches, to bring them to that condition, and in fact their blossoming, either on that or on any other day, shows that there has been an accumulated temperature and moisture to the amount just stated."

In a like manner do these correlations extend to insects and other animals, so that to the entomologist this field of study is open, and will be found much more interesting than the mere

collecting of insects for cabinet specimens. It will be urged that to succeed in these investigations the observer should live in the country and have leisure time at command. This is by no means necessary, for nearly all who study Entomology from a point of view beyond mere collecting, live in localities sufficiently suburban to carry on some observations of value.

"Theoretically the diary should begin the day after the winter solstice (*i.e.*, December 22nd), but in our latitudes the climate lags behind the sun's movements. . . . The middle of February, St. Valentine's Day, may be accepted as the beginning of the biological year, and the diary should be kept round the year from that time."

Preceding the diary proper is a very interesting Introduction, the thirty-two pages of which will be found well worth reading, including the Preface. Even if disinclined to encounter the tie of regular observations necessary for the successful results to be obtained by this system, the reader will find much in this Introduction for thoughtful consideration.

At the beginning is a coloured map, of very great interest, and it is only to be regretted that the observations hitherto made extend over such comparatively small area. The map represents a "spring chart," constructed for April flowering plants on the European continent. By the coloured patches we see at a glance the relative values of various localities as to whether "late" or "early," and it will surprise many of our readers to find that the Devonshire south coast is equal with the north-west coast of Italy in the flowering time of the same plants. The map, however, is still very incomplete in localities where observations could have been taken, though enough is shown to prove its value. If we can follow the same lines of observation with regard to insects, a map showing the appearance of any certain group of species would prove of the greatest value in suggesting solutions for problems at present conspicuous for their darkness and obscurity.

Mr. Roberts is much to be congratulated upon the first issue of what may be playfully called a "Nature's Birth-day Book," and we feel quite satisfied that as the work becomes better understood and appreciated, its adoption, with perhaps some slight modification, will become general.

It is hardly worth while to refer to certain apparent incongruities in the compilation of the pages of the diary, such as the

use of English names for insects, for we know that it is rather a hobby of Mr. Roberts's to establish a fixed code of English names for everything occurring in Britain ; but where is the advantage ? It is just as easy for anyone to learn the scientific name of a moth as *Apamea unanimitis* as its English sobriquet of the "uniform rustic," while our continental correspondents may be glad to hear that we can send them curious local forms of the former which would fail to reach their understanding as the latter. There is no hope of our establishing an English nomenclature for British insects, for even now, in closely associated localities, a common moth like *Arctia caia* is as frequently known as "woolly bear," "airy worm," or "tiger," according to its stage of existence.

Apart from such small matters, which may, and probably will, be set right in the next edition, the 'Naturalists' Diary' is a book which every entomologist should obtain, for though at the moment he may shirk the labour attendant upon keeping it systematically, he may alter his opinion after digesting the Introduction and map.—J. T. C.

Proceedings of the Dorset Natural History and Antiquarian Field Club. Vol. VII. Sherborne.

THIS volume refers to the work done during 1885, and is quite up to the excellent standard of the later issues of the series. The Club, we find from the annual report, was in prosperous condition, with assets to the extent of about £140 to the good.

The entomological work done is limited, but such as there is of much interest, especially the further full remarks by the Rev. O. P. Cambridge upon *Lyceus argiades*, which paper is illustrated by a handsome coloured plate, with two upper- and two under-sides of this species ; and a spray of the greater bird's-foot trefoil, *Lotus major*, which grows abundantly where the Dorset specimen of *L. argiades* occurred. Mr. Cambridge thinks this will probably be the food-plant of that butterfly in this country. There is an illustrated paper, by Mr. O. P. Cambridge, on "New and Rare British Spiders," which should not be lost sight of by those who are working this group of animals.—J. T. C.

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ENTOMOLOGY IN NORTH LANCASHIRE.

By J. ARKLE.

THE result of some cogitation as to where I should spend the last two weeks of a July holiday was to find myself a temporary resident in the little town of Morecambe. To North-country entomologists especially it may be interesting to know my experience of this neighbourhood, so rich in insect life. My captures were by no means extraordinary, but they are worth recording, as evidence of what may be done in North Lancashire, even under climatic conditions the reverse of favourable. I was fortunate in obtaining an introduction to Mr. H. Murray, of Morecambe and Carnforth, whose splendid collection afforded me so much pleasure, and whose kind directions and personal guidance resulted in most enjoyable excursions amongst the local Lepidoptera. To begin with, I will take Heysham Moss, a peat-moss covered with heath and fern, bog-myrtle and willow, situated along the shore, some three or four miles south of Morecambe. We take the turnpike-road for a mile and a half, pass the 'Cumberland View' Inn, turn down the first lane on the left, then the first on the right to a farmhouse where permission is given to cross a field or two between us and the Moss. On the willows past the homestead and still in the lane, we took larvæ of *Dicranura vinula*, while, hanging from the nettles, were pupæ of *Vanessa urticae*. A few captures were made here of *Epinephele tithonus*, while *E. ianira*, *Pieris rapæ*, and *Lycæna icarus* were sporting around, and, as a rule, allowed

to sport unmolested. It is evident that the Moss once stretched almost as far as the eye can reach, and that the encroaching cornfields will, in time, compel *Cænonympha typhon* to seek another home, but this year *C. typhon* was on the wing in dozens. *Carsia paludata* (*imbutata*) rushes from the heath at almost every step; *Anarta myrtilli*, *Saturnia paronia* (*carpini*) and *Bombyx quercus* challenge us to the chase. Such were the goodly company during last July, and I need not add that hostages are present with me as evidence of the fact. As we return we carefully examined the stone walls on the Morecambe road for *Bryophila perla*, where it rests in numbers during the day. With the aid of a friend I took a score on the walls of the railway-station alone.

An account of our minor entomological rambles among the lovely scenery skirting the shores of Morecambe Bay would be beyond the scope of this narrative. One expedition, however, to the Witherslack Mosses, on the north or opposite shore, deserves special reference. Early one morning in the very last days of the month, and under the leadership of Mr. Murray, I started on foot for Hest Bank, distant $2\frac{1}{2}$ miles along a part of the coast, which would well repay an evening visit. There is a fairly good footpath on the edge of the shingle. At Hest Bank railway-station we were joined by a Lancaster friend. After seating ourselves in the train we were soon rushing past Carnforth, Silverdale, and Arnside,—each well worth a day's visit,—and so on to Grange-over-Sands, where *Lycæna corydon*, I was informed, sports in profusion during the season. I may add that *L. argiolus* is said to be common enough at Arnside, while at Silverdale and Carnforth are *Argynnis aglaia*, *A. adippe*, *A. euphrosyne*, *A. selene*, and *Melitæa artemis*. At Arnside I took *Lycæna icarus*, *Cænonympha pamphilus*, *Lycæna astrarche* (*agestis*), and *Anaitis plagiata*.

At Grange-over-Sands we terminated the railway part of our excursion, and took the high-road almost due north for the village of Lindale. All along the road the rough ground on each side of the fences should be well worked, especially a rocky, boggy bit over the right fence, where *A. plagiata* occurs, and a young larch plantation over the left, commencing with a quarry, where the region of *Erebia æthiops* (*blandina*) seems centred. There are plenty of willows in the fences, where we again took

the larvæ of *D. vinula*. In the larch plantation we chased a fritillary — probably *Argynnis adippe*; but by this time the sunshine of the early morning had given place to a gloomy and thundery sky.

Time, if little else, was on the wing, and we were therefore compelled to quicken our pace in the direction of Lindale. Here is the 'Commercial' Inn, where we lunched. Being on the very edge of the Witherslack Mosses no time was lost, so crossing the road we struck through a few yards of field into ground covered with heath, young birches and Scotch firs. It was a warm, sheltered part of the moss, and teemed with insect life. *Anarta myrtilli* scudded about in every direction, but so swift and eccentric is the flight of this beautiful insect that of the scores we saw, only half a dozen were netted. *Nemeophila plantaginis* and *N. russula*—the former in splendid condition—were also plentiful. Our direction was now north-east and then north-west across the first moss, where we still kept on netting *plantaginis*. *Cænonympha typhon* was plentiful enough, but as the season for it was nearly over, the specimens captured were nearly always rubbed and worn. The whole of the mosses I visited in the Morecambe district, however, are evidently rich in beautiful varieties of this insect, chiefly dark forms. At intervals we came across swarms of *L. ægon*, the blue silvery spots under the wings being very distinctly marked—in fact, this lovely little butterfly was in splendid condition. Had the afternoon been sunny instead of dull, we should have doubtless seen it in greater numbers. Like *C. typhon*, however, it had to be raised by our footsteps from the heath. A fact that particularly struck me in connection with *C. typhon* was, that wherever I found it *C. pamphilus* was absent, and *vice versâ*. If the fact has been noticed by readers of the 'Entomologist' I should like to see an explanation.

Between this moss and the next, a much smaller one, there are two or three intervening cornfields. Our course had now become north-west, in the direction of the village of Newton, where the 'Derby Arms' is a well-known resort for entomologists. We got through the cornfields by skirting the hedges, in which buckthorn grows profusely. Along these hedges *Gonepteryx rhamni* will wing his flight in the coming October, and again in May.

After lingering here and there to feast on the splendid crops of wild raspberries, we reached Moss No. 2; but the day was done as far as netting was concerned, so we crossed into the road that leads down on the left to Newton, with a look of regret on Moss No. 3 and continuations stretching right away to the sky-line. Once in the road we also gave up the idea of following the turnpike north from the village, where, among the heath and bush and bramble on the hillside only a few yards away, *Argynnis paphia*, *A. adippe*, and others of the genus find their home. A hundred yards or so from the 'Derby Arms' in the opposite direction, but on the same Lindale Road and at the base of the hilly ground on the wayside, is a rough patch where, on another occasion, we took *Lycena astrarche* in profusion. We gave it a quarter of an hour, only to find every butterfly quiet and beyond disturbance in the deepening gloom. So we retraced our steps to the inn and commenced our journey homeward, by the lane we struck into after parting with the second moss. Here I have to record our last capture,—a full-fed and numerous brood of *Vanessa io* larvæ on the way-side nettles,—a large proportion of which were duly boxed. After a mile or so we left the lane and struck off at a right angle through some fields to the embankment guarding the estuary of the River Kent. This embankment is the haunt of countless *Zygæna filipendule* in the month of June. At Methop Head we crossed the estuary by walking along the viaduct to Arnside railway-station, and so closed a most enjoyable and eventful day.

2, George Street, Chester, August 26, 1886.

MICRO-LEPIDOPTERA IN 1886.

By J. B. HODGKINSON.

I TAKE the following stray notes from my memory of such work as I have done during the past season in my neighbourhood, but I should add that for the past four years I have been more or less an invalid, and during March and April last I could do no collecting, having then had a narrow escape from visiting other "happy hunting grounds."

My first captures for the season were some *Elachista* larvæ, which I expected would produce *E. atricomella*, but they all

turned out to be *E. luticomella*. All the month of May was cold and cheerless, as was most of June. In the last week of the latter month I had the pleasure of a visit from Mr. Sang, of Darlington, who came specially to take *Nemophora pilella*. We fortunately had a little sunshine, which tempted us to try for this moth; but on arrival at the ground everything was saturated with wet, and we only took about eighteen specimens; we added, however, to our bag some two or three dozen *Gelechia longicornis*.

My next ramble was to Carlisle in Whitsun-week, but the cold was very trying. I made two journeys to my old hunting-grounds near Arnthwaite, where I took in the two visits three moths, viz., one *Coccyx distinctana*, one *Eupæcilia nana*, and one *Tinea semirufella*! Mr. Threlfall had told me where to find the larvæ of *Coleophora olivaceella*, and with patient work I managed to take enough to breed a series. The rest of June was cold and windy, but I made a visit to Morecambe Bay for the larvæ of *Plutella annulatella*, but I had little success; the only moths I got were some splendid specimens of *Eupæcilia atricapitana*.

In July the weather improved. During the last week of June I went to Windermere, and went to work with a will to take *Nepticula intimella*, where I had noticed traces of it for the past twenty years. Lots of species of the genera *Lithocolletis* and *Ornix* were to be seen, but the specimens were generally in bad condition. Still, by working hard, I took an extraordinary number of species of these genera, and was pleased to find how long some of them remained out,—quite a fortnight,—perhaps on account of the superb weather we got during the time. I took eighteen species of *Lithocolletis*, the best being *L. distinctella*, a few *L. amyotella*, *L. kleemannella* (mostly bred). *Nepticula aucupariæ* remained out three weeks, and I took it in company with *N. intimella*, making up my series of a couple of dozens of the latter and four or five *N. continuella*. I have still many to determine, and possibly one new one. By sweeping the tops of the birches, willows, and mountain-ash shrubs I got half a hundred *Tinagma resplendella*, though, oddly enough, I got hardly any off alder, though this was mixed closely up with the others. After rest and refreshment, for the heat was sometimes intense, I came upon some *Ennychia octomaculata*. Finding a nice patch of golden-rod, I made search for *Leioptilus osteo-*

dactylus and *L. tephradactylus*, and got lots of the former with a few of the latter. One day, at about four o'clock p.m., I found *Lampronia luzella* flying, and took about eight examples; they are difficult to see, and soon spoil themselves if not set at once. While taking these one had to beware of *L. rubicella*, which affect the raspberries growing near by. *Phoxopteryx diminutana* occasionally turned up, but were frequently worn. My great prize on this occasion was *Chrysoclysta bimaculella* and several *C. schrankella* among *Epilobium*. I notice that Desvignes says he beat *C. bimaculella* out of sallow; also the late Mr. Benjamin Cooke got one on Chat Moss from sallow, but there were probably willow herbs growing near. I met also with *Laverna lacteella* and *L. paludicolella*. I searched well for *Eupithecia plumbeolata*, but failed to find it, though formerly I always got it about the 6th of July. I got, however, three *Coleophora wilkinsoni*, and, better still, as many *C. orbitella*, from among birches. I got a number of *Tinea bistrigella*. *Swammerdamia griseocapitella* was very common, and *Ornix loganella* was not rare but rather late, as was *Nepticula betulicolella*. *Scopariæ* were fairly common, but I only took one *S. conspiciualis*. *Olindia ulmana* was exceptionally large and fine; in fact, this applied to most species. *Hypermezia cruciana* was exceptionally large. I took a pair of what appears to be the latter species, but if so, of a curious variety, both being bright and rich brown in colour. They were *in copulâ*, which seemed odd, for I saw no others like them.

Between the 9th and 21st July I visited Arnside, and there found a new locality for *Phothedes captiuncula*, while last year I took this species as early as the 5th June at Witherslack. The 1st of August found me looking again for larvæ of *Nepticula intimella*, but only five were obtained. The larvæ of *Eupithecia valerianata* were common at this date. Shortly after this I went for a fortnight to the Isle of Man, and near Port Erin found, by working day by day, a couple of hundred larvæ of *Eupithecia distinctata* on the wild thyme. While in the island I saw an injured *Chærocampa celerio*, which had been taken on Douglas Head. Female *Lycæna icarus* were remarkably large, and there was a considerable range of variation of the spots on the under side. Several *Epinephele ianira* had double white spots in the darker ones.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS NEAR SWANAGE.—I enclose the following particulars of a butterfly found here on August 19th last, about a quarter of a mile from the sea-coast. The body is about three-quarters of an inch long, the wings being four inches from tip to tip when extended. The wings are very distinctly marked with black veins, the intervening spaces being of a tawny orange colour. As I had never before captured a similar specimen, and finding it exactly like one I had received from South America, I submitted it to a distinguished entomologist staying in the neighbourhood, who informs me that it is *Anosia plexippus*, which is an inhabitant of Canada. It is curious that this butterfly should be found here, as there is absolutely no direct trade with America.—J. E. MOWLEM; Swanage, September 9, 1886. [If our correspondent will refer to the February number of the 'Entomologist' (p. 26), he will find this species figured, and an account of several which were taken in England last year.—ED.]

PIERIS BRASSICÆ.—The large white has been comparatively scarce this season (Entom. 174). I do not think I have seen more than a dozen specimens since May last. The wet weather experienced in the spring may partially account for it.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

FOOD-PLANTS OF MELITÆA ATHALIA.—In the 'Entomologist,' (Entom. ii. 244) the late Mr. E. Newman says, "I am indebted to Mr. Bignell for a liberal supply of this local larva, which appears to be hitherto unknown to British entomologists," I first became acquainted with this larva in 1864, and in May, 1865, sent those mentioned above; these larvæ were found feeding on *Plantago lanceolata* (narrow-leaved plantain), and *Veronica chamædrys* (germander speedwell). The butterfly remained in this locality for five years; since that time I have not been able to obtain a single caterpillar, and but few imagines. — G. C. BIGNELL; Stonehouse, June 2, 1886.

EUCHLOE CARDAMINES IN AUTUMN.—On the 18th August I caught a much damaged specimen of *E. cardamines* in Bohemia Road, St. Leonards-on-Sea. Can any reader of the 'Entomologist' account for this late appearance?—A. G. FIELD; Aug., 1886.

VANESSA ANTIOPA IN ESSEX.—A perfect specimen of *V. antiopa* was taken on Sept. 9th by a gardener in a greenhouse in my garden.—W. H. PEMBERTON-BARNES; Havering-atte-Bower, Essex.

VARIETY OF LYCENA BELLARGUS.—I have paid two visits this month to the locality in which I took the varieties mentioned in my note of June last (Entom. 176); and although the autumn brood of this species was a very scanty one indeed, I should say hardly a tenth part of the number seen in the spring, I yet was fortunate enough to meet with a pair on each occasion, similar in every respect, save size, to those previously recorded. One of the females was much worn, and one of the males somewhat crippled, as was the case with two of the former captures; but the other pair were in very fine condition, although not so large as the spring ones. If all be well I hope to meet with this variety again next spring, as I should fancy the form is a permanent one and peculiar to this spot, never having met with it before at other places that I have visited; still others may, perhaps, have done so, and I should be pleased to compare notes. I may add that I have never till this season worked this locality for *L. bellargus*.—E. SABINE; 22, The Villas, Erith, September, 1886.

STRIDULATION OF ACHERONTIA ATROPOS.—In the 'Entomologist,' p. 148, Mr. South is so good as to call attention to some former notes of mine on this, the grandest of our Sphingidæ; and having just bred a few specimens I am induced to add a few supplementary remarks. Here, as in divers other parts of the country, the larvæ of *Acherontia atropos* were last season more than usually abundant, and I became possessed of a goodly number. I took much pains in rearing them, feeding them on their usual pabulum—potato-leaves; and with one or two exceptions all went down into the earth, with which I filled some immense flower-pots on their behalf. I should like to make the enquiry why some larvæ so resolutely refuse to bury themselves, roaming restlessly round and round, seeking a place of egress, whilst others will as readily penetrate the soil? This was also the case with some larvæ of *Asteroscopus nubeculosa*, which I reared from ova sent me from Rannoch this year. Not a moth emerged last autumn; and when June and the greater part of July had passed without a single imago, I began to fear that all had perished. I may say that in December I turned the pupæ out of the flower-pots, and placed them in tins filled with

cocoa-nut fibre, where they remained for the winter and spring. At the end of May they were deposited in moss in the breeding-cage, which was kept in our little conservatory. However, on July 20th I was much pleased to see a fine specimen had come out; some days later there was another. On the 26th, three; one unfortunately with one of the anterior wings slightly deformed. After four days, again another made its appearance; and on the 3rd August two more. All of them were females, and each insect was a veritable squeaker. To kill them I always catch hold of them at the base of the wings, and apply a camel's-hair brush steeped in chloroform to the proboscis, a proceeding to which they strongly object, crying out as loudly as possible against it. A fact worth recording occurred, when on the last-mentioned date the two specimens were in the cage together. No sooner had I caught hold of the one moth, and it had commenced squeaking out its protestations, than its companion crawled on to my fingers, and could with difficulty be disengaged; but not thinking the wings of this one sufficiently dried, I did not then wish to put it to death, and gave it accordingly a brief respite. From the circumstance just narrated it would appear that the cry is distinguished as a means of communication between the insects. I think there is no doubt that the sound is caused by the proboscis rubbing against the palpi, though I am disposed to believe that the friction of some parts of the thorax may have somewhat to do with it. But as I have previously stated—and each time that I have repeated the experiment the experience was confirmatory—as soon as the proboscis is pressed down the squeaking ceases. Up to the present time no more moths have emerged.—JOSEPH ANDERSON, jun.; Chichester, August 10, 1886.

ACHERONTIA ATROPOS.—I was fortunate enough to secure three larvæ of the above last autumn; two died in the winter in the pupa state; and on July 24th a perfect specimen emerged from the remaining one. Is not this very late?—W. E. BUTLER; 91, Chatham Street, Reading, August 10, 1886.

SPHINX CONVULVULI IN ABERDEENSHIRE.—On 6th September a fine female specimen of the above species was captured, and brought to me by my brother, who found it sitting among grass at the road-side near Pitcaple.—W. REID; Pitcaple, Aberdeen, N.B.

DEILEPHILA EUPHORBIE IN CHESHIRE.—I have had a specimen of *Deilephila euphorbiæ* brought to me, which was caught at Bowdon this season. Evidently the larva had fed near where the moth was found, as both wings are crippled on the right side; therefore it could not fly.—J. CHAPPELL; 29, Welbeck Street, Chorlton-on-Medlock, Manchester, September 1, 1886.

CHÆROCAMPA NERII IN SUSSEX.—I had the pleasure to-day of capturing a fine specimen of *Chærocampa nerii* in the front garden of a cottage in Kensington Gardens, about three o'clock in the afternoon. The insect was at rest, suspended from the stalk of a lily bud. About a quarter of an hour later I called on a friend, Mr. F. Trangmar, who at once recognised the insect, which was still alive.—T. LANGLEY; 7, Elder Place, Brighton, September 7, 1886.

SMERINTHUS OCELLATUS.—The larvæ of this moth are unusually abundant this year on the wild crab. I took half a dozen during a short walk, and while shooting could have taken a dozen more.—G. M. A. HEWETT; South Searle Vicarage, Newark.

CALLIMORPHA HERA IN SOUTH DEVON.—Being anxious to settle the question as to the doubtful nativity of *Callimorpha hera* in Devonshire, during the month of August I again worked the locality of Dawlish for this species, and was well rewarded, having been successful in taking some fine specimens. My first observation took place on August 19th, when one (a yellow variety) unfortunately escaped. August 26th, one (normal type) was brought me by a boy from Starcross. August 27th I took three fine ones, another on Aug. 28th, and one more by a boy. These were all taken within two miles of Starcross, but in different places. On Aug. 31st one (yellow) was taken at light by a signalman of Teignmouth, some five miles from the other locality; and lastly, on Sept. 5th a lady friend saw one settled on a window of St. Mark's Church, Dawlish, and she succeeded in capturing it after service. After this experience I must give it as my opinion that *C. hera* may now be considered as indigenous to the coast of South Devon.—J. JAGER; 180, Kensington Park Road, Notting Hill, W., September, 1886.

OCNERIA DISPAR.—I have frequently bred this insect from the small larval stage. They have invariably pupated well; but on the perfect insects emerging nearly four out of five females have

proved to be crippled. The males always come out better. Most of the imperfect females are not badly crippled, but simply at the ends of the wings; in some cases only the hind wings. I have tried to guard against these perpetual cripples, but have as yet failed. Can any reader kindly suggest why? — J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, September, 1886.

ABNORMAL EMERGENCE OF SATURNIA PAVONIA.—I was greatly astonished last Thursday at having an unusually large and fine male specimen of this moth emerge in one of my breeding-cages. It was from one of several pupæ, the larvæ of which pupated last August. All failed to appear in the spring, and were, therefore, I thought, lying over till next year. Surely the appearance of *S. pavonia* in August is a somewhat uncommon occurrence? The pupæ have all along been kept in a room without a fire.—W. H. BLABER; Beckworth, Lindfield, Sussex, August 16, 1886.

ACRONYCTA ACERIS.—I find no record of a second brood of this moth. On the 11th of this month (September) I took two specimens at sugar, both quite fresh, but very unlike the early brood, being a dull greenish yellow instead of the pure grey of the earlier lot.—G. M. A. HEWETT; South Searle Vicarage, Newark.

BREEDING CIDARIA RETICULATA AND PENTHINA POSTREMANA.—After five years very hard searching for *C. reticulata* in the Lake District of the North of England, I have at last succeeded in finding it. Last autumn I had the good fortune to take thirteen larvæ of *Cidaria reticulata* and *Penthina postremana*. From them I have bred six good specimens and two cripples of the former, and four specimens of *P. postremana*. I find with the breeding of *Cidaria reticulata* there are more than usual difficulties to contend with, when rearing the larvæ at any distance from its food-plant, *Impatiens noli-me-tangere*. This plant, when gathered, is very unsuitable for travelling far, because if the least exposed to air it rapidly shrivels up, and when confined too closely soon turns mouldy. It grows in very wet boggy places, so there must be a fresh supply of plant obtained every day to ensure any success with the larvæ. Although I do not live far from its locality I found this a great drawback. The larvæ were very unwilling to partake of food more than a day old; it was therefore no use taking more than one plant at once; and further, if I had done so I should soon have taken

them all. The small bed of the plants I found is not many yards square, and, although the ground seems as suitable for it for twenty yards round, it does not seem to spread. I knew the place where Mr. Hodgkinson, of Preston, used to take the larvæ, but I could never find one there. I think I made a very good start with this much-wanted species, for Mr. Hodgkinson tells me he never did so well from the same number of larvæ; but I have not so far to go for the food-plant as he has. I was a little disappointed at only breeding four *P. postremana*. This is very bad, but I think is owing to their not being kept out of doors.—H. MURRAY; 20, Queen Street, Morecambe, September, 1886.

[Of the 130 or 140 species of *Impatiens* known to botanists only one, *I. noli-me-tangere*, is a native of temperate Europe. The British stations for this plant are probably few in number and of small extent individually. It is known to occur as a wildling in mountainous parts of Lancashire, Westmoreland, and North Wales. Mr. Meek observed the plant in Merionethshire this year, and found a larva thereon, which he believes to be that of *Cidaria reticulata*. Species of *Impatiens* are included among the tender annuals raised by the lover of flowers. They may also be purchased in full bloom of the florist, or the “all a-bloin’ and a-groin’” coster, for a small sum. There is, too, a tall and more robust species which has lately become quite a feature in many gardens in and around London, as also in the country. Possibly this last, or even the less hardy plants, would be found to afford a suitable pabulum for the larvæ of *Cidaria reticulata* or *Penthina postremana*, in which case the entomologist who may obtain either or both larvæ would be saved considerable trouble in the matter of food supply and at the same time the risk of destroying the plant in any of its stations would be avoided.—R. S.]

APAMEA CONNEXA.—Could any of your readers tell me whether the larva of this insect has yet been discovered, and if so, where I can find a description of it? Many old entomologists, resident here, tell me that thousands of *A. connexa* have passed through their hands, but not one of them ever had the fortune to obtain ova.—A. E. HALL; Norbury, Pitsmore, Sheffield, Sept., 1886.

[“The larva is blackish, lighter above, with a pale line on the back; it feeds on grass in April” (Kirby, ‘European Butterflies and Moths’).]

MIANA CAPTIUNCULA (EXPOLITA) AT ARNSIDE.—Early in July I struck a moth, going with the wind at a furious rate, while collecting at Arnside, near Grange-over-Sands. Judge of my surprise when I saw it was *M. captiuncula*. I was boxing it, when a gentleman, who preserves the game thereabout, spoke to me. He left me, but returned in a few minutes, and brought another specimen in his hat, saying he would catch me some more. "Well," I said, "you can go at it, for there is a spare net." We got about two dozen, and he proved the best man at catching, and I did the boxing. He afterwards sent me some on to Windermere, as late as July 20th; some fine, and some dead with the heat. I shall have a fair supply for my friends.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 26, 1886.

CIRRHÆDIA XERAMPELINA, &C., NEAR WELCHPOOL.—On July 29th my brother took a specimen of *Geometra papilionaria* flying at dusk near here. It was in fair condition, with the exception of a cut in one of the front wings. I have also bred a splendid specimen of *C. xerampelina* from a caterpillar found under moss on an ash tree in the autumn. I found three caterpillars, but two died. As the Rev. J. Greene says that the larva forms a cocoon beneath the surface of the earth, this may be interesting. The insect emerged on August 2nd. I should be glad if any of your readers could tell me if either of these insects has been seen here before. Unfortunately entomologists are very scarce throughout the district.—STANLEY P. JONES; Westwood, Welchpool, August 5, 1886.

VARIETIES OF AMPHIDASYS BETULARIA.—In the Manchester district this species has gradually altered in colour from light to dark during the last forty years. In my early days the black variety was almost unknown. I think Mr. Edleston purchased the first I heard of. About that time I reared two from pupæ obtained by digging. Since then I have often got black and ordinary types from pupæ; also reared them from larvæ and ova. I have found both forms *in copulâ*. Sometimes an ordinary type with a black one, and black with intermediate. Recently I have seldom seen two ordinary types *in copulâ*, although it was the rule formerly. The female is more frequently black, and the dark forms predominate at present. I do not think food has any influence on variation of this species. I have found larvæ on

birch, alder, oak, elm, beech, apple, pear, willow, poplar, sycamore, &c., in gardens, parks, woods, moors, mosses, and on open plains in the following localities:—Bowdon, Knutsford, Delamere, Alderley, Disley, Chat Moss, and in the vicinity of Manchester generally. The black variety has been reared at Bolton and Middleton. In the latter town a number of buff varieties were, I believe, reared from ova obtained from a female which had been previously reared from ova in confinement. It has been suggested that they were acted upon chemically, but I do not think there is any truth in the assertion in that instance. And the most singular part is that they—at least those that I have seen—were light buff, instead of where black as in ordinary types; though I have not seen a specimen entirely buff, which would have been the case if a black one had been treated chemically.—JOSEPH CHAPPELL; 29, Welbeck Street, Chorlton-on-Medlock, Manchester, Sept. 1, 1886.

THE TEPHROSIA DISCUSSION.—I paid a visit to a friend yesterday, who drew my attention to a discussion in the 'Entomologist' on *Tephrosia crepuscularia* and *T. biundularia*. My friend has had a series sent him of what was said to be each species. I declared them to be one only, viz., *T. crepuscularia*; in fact we were both of the same opinion. I have often taken *T. biundularia* in Drinkwaters Wood, Agecroft, and in Botany Bay Wood, near Worsley, on and near larch trees. It is always a dark and distinct species. I have taken *T. crepuscularia* in Delamere Forest, Cheshire, and Burnt Wood, Staffordshire, in abundance on various kinds of trees, except larch, and sparingly on Rudd Heath; but no *T. biundularia*. I have also reared them from the pupa with the same result, but not from the ova, not thinking it worth my trouble. My friend has frequently captured *T. crepuscularia* in Mr. Philips' park at Pilkington, but no *T. biundularia* there. I have a good series of both species, but no intermediate forms. The above species have not varied from what they were forty years ago. My advice would be to rear them from the ova, which may be easily obtained.—JOSEPH CHAPPELL; August 24, 1886.

TIMANDRA AMATARIA DOUBLE-BROODED.—During the last three seasons I have taken specimens of *Timandra amataria* on the cliffs at Kingsdown, near Deal, in the middle of August.

These specimens have been, in every instance, less brightly marked and slightly smaller than the brood occurring generally some six weeks earlier. I have also taken late specimens in Chattenden Woods, and believe the insect regularly double-brooded, although from the lessened numbers I feel certain that, as the editorial note to Mr. Frohawk's query explains, only a portion of the larvæ feed up, pupate, and emerge in the autumn.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., September 9, 1886. [Snellen, in 'De Vlinders Nederland,' vol. i. p. 568, says, "June, August, two generations."—E. A. F.]

UNUSUAL FOOD FOR ABRAXAS GROSSULARIATA.—I have this year bred a considerable number of *A. grossulariata* by feeding the larvæ, which were found on the common *Euonymus*, on the flowering currant (*Ribes sanguineum*). As this plant seems in general to be so disliked by lepidopterous larva, I thought the above fact might be of interest to some of your readers.—ALFRED G. SCORER; Abercorn Lodge, Upper Hamilton Terrace.

FOOD OF LOBOPHORA VIRETATA.—In answer to a correspondent (Entom. 181) I may say that in Sutton Park this insect feeds on holly. There is no privet anywhere in the woods.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

BREEDING BOTYS TERREALIS.—From larvæ of the above, taken at Grange last September, I was successful this season in breeding a good majority for the first time. They previously always died through the winter. Last year I put the larvæ, when full-fed, into a large gauze cage, and cut small pieces of hollow reed, two inches long, and put them into the cage with pieces of crumpled paper; into these the larvæ went. I kept them exposed out of doors all winter, and have thus been successful in breeding nearly all of them. This may interest some breeders of *Pyrilidæ*.—H. MURRAY; 20, Queen Street, Morecambe, September, 1886.

SPILODES PALEALIS IN YORKSHIRE.—Among a number of Lepidoptera recently sent me to name by Mr. Joseph Sewell, of Whitby, I found this species, which Mr. Sewell informed me he took on the cliffs at Whitby, and also that several other specimens had been taken by Mr. Lister of that town. The species is quite new to the county list.—G. T. PORRITT; Huddersfield, August 6, 1886.

CENECTRA PILLERIANA, Schiff., AND *PTEROPHORUS PALUDUM*, Zell.—Both these species have been met with here during the past summer by myself and my sons. The former is the pale greenish olive-brown form, with—for the most part—the markings nearly obsolete. The latter is an exceedingly delicate little insect, and under the most favourable conditions of weather appears, so far as our experience goes, only to fly for a very short time just before and just after sunset. Can any of the correspondents of the 'Entomologist' inform us what the larva feeds upon, and when it should be looked for?—O. P. CAMBRIDGE; Bloxworth Rectory, September 27, 1886.

GELECHIA OSSEELLA AT DEAL.—I am pleased to add *Gelechia osseella* to the list of the fauna of the Deal district. A single specimen was detected by Mr. Sang in some species of Lepidoptera which I was unable to determine, and which he named for me.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., September 9, 1886.

NOTES FROM HAMPSHIRE.—Accompanied by Mr. McRae, I spent a second week, commencing August 11th, in the New Forest, this year at Brockenhurst. We were disappointed in finding *Catocala sponsa* and *C. promissa* scarce again, as we only managed to obtain a few specimens of each. *Amphipyra pyramidea* and *Triphæna fimbria* and *T. ianthina* came very freely to sugar, as well as *Noctua baia*, these being about the only Noctuæ of any importance taken at sugar. We also secured some good varieties of *Cidaria truncata (russata)* at sugar, though most of them were taken on the wing, and were in really fine condition. *Ligdia adustata*, to our surprise, was still out. Of Rhopalocera a pair of *Thecla betulæ* and *Vanessa polychloros* fell to my net. On the 18th of August I returned to Christchurch, where I had my best success. The following is a list of captures in this neighbourhood from that date until now:—At light, *Pterostoma palpina*, *Lithosia griseola* and its var. *stramineola*, *Eugenia fuscantaria*, *Eugonia quercinaria (angularia)*, *E. crosaria*, *Luperina cespitis*, *Eremobia ochroleuca*, *Hydræcia micacea*. At sugar, *Calymnia diffinis* and *C. affinis*, *Noctua dahlîi*, *N. umbrosa*, *N. rubi*, *Cirrædia xerampelina*, *Xanthia flava (silago)*, *X. fulvago (cerago)*, *Xylina socia (petrificata)*, *Calocampa exoleta*. I might as well add that I took this morning a male specimen of *Colias edusa*, the first one taken

by me since the year 1878, when they were so plentiful.—J. M. ADYE; Somerford Grange, Christchurch, Sept. 20, 1886.

LEPIDOPTERA OF THE TAME VALLEY.—It may perhaps interest some of your readers to know that the number of species of Macro-Lepidoptera which have been recorded as having occurred in the Tame Valley (of which Birmingham is the centre) is 473, which is considerably more than half of the number of species occurring in the British Isles. The above number is made up as follows:—Rhopalocera, 54; Heterocera (Sphinges, 24; Bombyces, 77; Noctuæ, 178; Geometræ, 140), 419. There is no doubt that the district contains considerably more than that, but at present it has been but imperfectly worked.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

EATING CICADAS. — “Mr. Howard remarked (Proc. Ent. Soc. of Washington, vol. i., p. 29, June, 1885) upon his experience regarding the edibility of the Periodical Cicada. He had continued the experiment begun by Dr. Riley, the latter having been called away from town. With the aid of the Doctor's cook he had prepared a plain stew, a thick milk stew, and a broil. The Cicadas were collected just as they emerged from the pupæ, and were thrown into cold water, in which they remained over night. They were cooked the next morning, and served at breakfast-time. They imparted a distinct and not unpleasant flavour to the stews, but were not at all palatable themselves, as they were reduced to nothing but bits of flabby skin. The broil lacked substance. The most palatable method of cooking is to fry in batter, when they remind one of shrimps. They will never prove a delicacy.”

RAPID HATCHING OF LEPIDOPTEROUS OVA.—In the evening of Saturday, the 6th of August, a worn female specimen of *Acidalia versata* deposited some two dozen ova in a pill-box. On seeing Mr. G. H. Raynor's remarks on this subject (Entom. p. 209), I determined to note carefully how long these eggs would be in hatching. About four p.m., on Thursday the 11th August, upon looking into the pill-box in which they had been laid, I was exceedingly surprised to find that all the ova had produced young larvæ, thus being only five days from depositing to hatching. I may say that here the weather has been unusually cold for August.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

SUNFLOWERS.—I would recommend every entomologist to grow sunflowers, on account of the number of insects which they attract. Diptera come to them in immense numbers. They are also good baits for butterflies, particularly Vanessidæ; on the other hand, I have never seen any of the Pieridæ near them. Bees are very fond of sunflowers, on account of the abundance of honey which they contain. I have observed numbers of bees to remain on these flowers for several hours together sipping the sweets, and in the end to become so intoxicated that they were unable to fly away. Many of the greedy insects get so covered with the pollen that they look like a mass of yellow. Sunflowers would make a good substitute for "sugaring" in gardens where there are no trees. The Noctuæ come to them in great numbers at dusk.—W. HARCOURT BATH; Sutton Coldfield, Sept., 1886.

PLAGUE OF LARVÆ.—During the latter part of last year the large vineyard belonging to Don Federico Puga Borne, of Chillan, Chili, was attacked by so many larvæ of a species of *Arctiidæ* that the whole of the plants were entirely stripped of their leaves in a few days. Señor Puga Borne offered the price of 20 cents a gallon for the larvæ to some boys, who immediately went to work, and in five days they collected no less than sixty bags full, equal to about forty-five bushels English measure. Two dozen of the larvæ were sent to Santiago to the National Museum, and imagines have just emerged,—a species of *Laora*, Walker, and evidently new to Science, as it does not correspond to any of the four descriptions of Butler in the Trans. Ent. Soc. London, for the year 1882, and which are the only known species of this genus from Chili. The larvæ of the genus *Laora* appear to have a peculiarity of their own, and I have never observed it in the larva of any other genus. The peculiarity is, that the species appear to undergo the greater part of its metamorphosis in the larval state; for when full-fed they climb up the sides of the breeding cage, and there remain without moving and without food for three, and even four months, at the end of which time they begin to spin their cocoon, and in a few days the imagines begin to appear, so that when full-fed they either appear to need ripening or are preparing the silk for their cocoons; but then why so long—from three to four months—in the larval state after once fed? When in the pupal state they rarely, if ever, pass

twenty days.—WILLIAM BARTLETT CALVERT; Colegio Ingles, Nataniel, 13, Santiago, Chili, April 30, 1886.

NOTES ON GALL COLLECTING.—From the galls collected last winter I have reared nine specimens of the pretty *Catoptria juliana*. For the last ten years I have devoted considerable time to gall-collecting during the winter months, the principal object being the acquisition of *Ephippiphora obscurana*, an insect not often met with in the perfect state. The greatest quantity of galls were collected during the winter of 1878—9, from which only one one *E. obscurana* was reared, the average of seven years being six. A good series of *Heusimene fimbriana*, *Carpocapsa splendidulana* and *Coccyx argyranus* were bred regularly for the first six years, with occasional specimens of *Scardia granella*, *Gelechia scalella* (*alella*), *Teleia luculella*, *Æcophora lunarella*, &c. *H. fimbriana* then ceased to appear for four years, but has put in an appearance again this year, seven having been taken from my cages. Last year there was a decided improvement in the number of *E. obscurana* reared, and this season the number is still greater, which may perhaps be attributed to the fine weather prevailing at the time of its emergence last year.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., Sept. 6, 1886.

TRESPASSING.—May I ask for a little space in the 'Entomologist' to treat of a matter which may concern, at some time or other, all collectors? A (we will say) is a collector who has discovered good ground, and makes no secret of it. This ground is "strictly preserved," and A has with much difficulty obtained leave of access to it, the difficulty being enhanced by the preserver thinking—rightly or wrongly—that where one collector enters, others are sure to follow. B is another collector who is, naturally, anxious to explore this good ground. He attempts to do so and is challenged by the keepers. He tells him that A gave him leave to go on the ground, and is, of course, laughed to scorn. A, it need scarcely be said, had no power, nor made any assumption of having the power, to give leave, and the consequence of B's statement to the keepers is that A's relations with the proprietor are not the more friendly. To put another case: A has, in preserved ground, discovered a rare insect, and does not conceal the locality. B visits the locality but fails to get the insect, so asks the keeper in charge to try and get specimens for him,

saying that A (who did nothing of the sort) told him to apply to the keeper. The master of the keeper may hear of this and be naturally displeased with A (with whom he is on friendly terms) for attempting (as he supposes) to employ his servants. The master of course knows nothing of B. Now though one entomologist is, or should be, ready to help another to the best of his power, such help cannot be expected to extend to the unsanctioned use of his name. It has been my misfortune to have had my name used—more than once—in ways similar to those I have sketched above, and I wish to know how I am to protect myself in the future. I hope that I am as ready as any other entomologist to help my brethren, but such help cannot be taken as including the unauthorised use of my name as an “Open, Sesame!” to forbidden ground—an attempt which I fear will do no good to the user and cause some unpleasantness for me. I should not have troubled you with this note if it had been a matter which only concerned myself, but what occurred to me has doubtless happened to others, and therefore concerns the fraternity at large.

F. BUCHANAN WHITE; Perth.

AN AMERICAN BUTTERFLY. — We learn from the ‘Entomologist,’ that our American butterfly, *Danaïs archippus*, after taking possession within a few years of the Sandwich Islands and Australia, and while making rapid conquest of the Malayan Archipelago, has as well invaded England, and has been taken so often that he seems likely to conquer and stay. It is rather difficult for the great majority of Lepidopterists to recognise him under the name of *Anosia plexippus*, but that is the name that the British Museum gives to what the rest of the lepidopterological world calls *Danaïs archippus*. We suppose, after the English fashion (if it be not done already), he will soon be dubbed with a “common name” as well, and his identity still further disguised. But none the less he is an acquisition to the English fauna, new, larger than any of the rest of their butterflies, brilliant in colour, showy in appearance, easily caught, easily reared, novel and beautiful in chrysalis and larva, and withal American.—G. D. HULST; ‘Entomologica Americana,’ ii. 104, August, 1886.

Errata.—Page 232, first line should be first line of p. 233. Page 256, line 3 from bottom, for *flava* read *flavago*; line 4, for *Cirrædia* read *Cirrædia*; line 7, for *Eugenia* read *Eugonia*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*September 1st, 1886.* Robert McLachlan, Esq., F.R.S., President, in the chair. The following gentlemen were elected Fellows:—The Rev. Professor Dickson, D.D., of Glasgow University; Mr. P. Cowell, of Liverpool; Mr. A. O. Walker, of Colwyn Bay, North Wales; and Mr. Lyddon Surrage, of Hertford College, Oxford. The President remarked with regard to the gnats from the Kent Water-works, exhibited at the last meeting, that Professor Westwood had since informed Mr. Douglas that they were only the ordinary *Culex pipiens*. Mr. Slater exhibited certain parasites found on the body of a larva of *Smerinthus tiliæ*, which Mr. Waterhouse believed to be *Uropoda vegetans*, a species of *Acari*. Mr. W. Warren exhibited the following Lepidoptera, viz.:—*Eupithecia fraxinata*, caught in Regent's Park; *E. innotata* (Hüb.), bred from *Artemisia maritima*; a variety of *Eupithecia satyrata*; a *Gelechia*, caught in Wicken Fen twenty years ago by Mr. Bond, and believed to be a new species; *G. fumatella* (Dgl.) or *celerella* (Stn.) from Hayling Island; *G. vilella* (Zell.), bred from larvæ collected on the Essex coast on mallow; *Lithocolletis scabiosella* (Dgl.), bred from larvæ found near Croydon; and *Catoptria parvulana* (Wlk.), bred by Mr. Vine, of Brighton, from *Serratula tinctoria*. He also exhibited larvæ of *Gelechia vilella*. Mr. South exhibited specimens of *Dicrorampha distinctana* (Hein.), and stated that he considered it to be merely a variety or local form of *D. consortana*, from which, in the larval stage, it could not be separated. Mr. Stevens exhibited a living specimen of *Clerus formicarius*, recently found under the bark of an ash tree in Arundel Park, Sussex. Mr. Billups exhibited *Chrysis succincta* (Linn.), taken by sweeping at Chobham, on the 28th July last. He stated that this very rare species was recorded by Shuckard as having been taken in a sandy lane near Brockenhurst, in the New Forest, and at Blackwater, on the borders of Berks and Hants; and he further stated that the late Mr. Frederick Smith had also taken two specimens of this species in Hampshire. Mr. Billups also exhibited *Microphysa elegantula* (Baer.), taken at Broadstairs, Kent, on the 23rd August last. The Rev. W. W. Fowler exhibited, on behalf of Mr. Theodore Wood, a larva of *Langelandia anophthalma* (Aubé), a

species new to Britain. Mr. H. Goss exhibited specimens of *Oxygastra curtisi* (Dale), recently taken near Christchurch, Hants. He stated that he had met with the species in the same locality in 1878, but had never seen it anywhere else in the United Kingdom, nor was he aware of any recent record of its capture. Mr. M'Lachlan observed that the species was taken many years ago in Dorsetshire by the late Mr. Dale, but that he knew of no recent captures, except those recorded by Mr. Goss. He also made some remarks as to the distribution of the species on the continent of Europe. Mr. M'Lachlan exhibited a specimen of *Dilar meridionalis* (Hagen), taken by him in July last in the Pyrénées Orientales; also about 150 examples of the genus *Chrysopa* from the same district, where these insects abounded. Amongst them were *C. vulgaris* (Schneider), *perla* (L.), *walkeri* (Brauer), *viridana* (Schneider), *tenella* (Schneider), *prasina* (Burm.) and varieties, *flava* (Scop.), *septempunctata* (Wesm.), *flavifrons* (Brauer), and others not yet fully identified. Mr. M'Lachlan stated that he had obtained about 1500 specimens of Neuroptera in all families during his recent visit to the Pyrenees, which were being prepared for study. He also exhibited a few Coleoptera from the same district, and remarked on the extraordinary abundance of the pretty Lamellicorn, *Hoplia cærulea*, which was so common as to give the meadows the appearance of being studded with multitudes of brilliant blue flowers. Mr. C. O. Waterhouse called attention to the numerous reports, which had lately appeared in the newspapers, of the supposed occurrence of the Hessian fly (*Cecidomyia destructor*) in Britain, and inquired whether any communication on the subject had reached the Society. The Rev. W. W. Fowler stated, in reply, that he had been in communication with Miss Ormerod on the subject, and that she had informed him that neither the imago nor larva of the species had been seen, and that the identity of the species rested on the supposed discovery of the pupa. Mr. A. H. Swinton communicated a paper, entitled "The dances of the Golden Swift." In this paper the author expressed an opinion that the peculiar oscillating flight of the male of this and allied species had the effect of distributing certain odours for the purpose of attracting the females. Mr. Jenner Weir made some remarks on the subject.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Sept. 2nd, 1886. R. Adkin, Esq., F.E.S., President, in the chair. Mr. J. H. Carpenter exhibited dark forms of *Smerinthus populi*. Mr. Wellman, a box of Exotic Lepidoptera, all taken on board ship while at sea; one, a species of *Sphinx*, having been captured about 1000 miles from land; also a large number of varieties of *Bryophila perla*, and living larvæ of *Cidaria picata* and *Acidalia rusticata*. Mr. Sheldon, gray and red forms of *Noctua castanea*, bred from larvæ taken on Shirley Heath, Surrey. Mr. South, nine varieties of *Lycæna corydon* from Eastbourne; the exhibitor said that he had taken a number of specimens which formed the connecting links between those now exhibited; one group had but few spots on the under side, in another the spots were absent, and in the remaining group the spots were confluent. This gentleman also exhibited varieties of *Abraxas grossulariata*, and specimens of *Dicrorampha consortana*, S., var. *distinctana*, Hein. With reference to this last-mentioned insect, Mr. South said that he first took a couple of specimens in 1881 at North Devon, one of which was sent to Mr. C. G. Barrett, who identified it as *Dicrorampha distinctana* of Heinemann. This year he had bred fourteen specimens from a batch of *Chrysanthemum* received from North Devon, and the larva was identical with the description of a larva of *consortana*, taken by him at Shanklin, Isle of Wight. Mr. J. J. Weir exhibited seven specimens of *Argynnis paphia* and one of *A. euphrosyne*, and drew attention to a number of white spots on the wings, which he stated were not suffused spots, as in *ianira*, but were always well defined, and in nearly all cases symmetrical. A discussion then took place as to the origin of these spots, in which Messrs. South, Carrington, Adkin, Sheldon, and others took part. Mr. Adkin exhibited light and dark forms of *Cleoceris viminalis*. Mr. Cooper, *Zonosoma orbicularia*, *Eupithecia subfulvata*, and *Tephrosia biundularia*, bred from a female captured June last, the larvæ having fed upon knot-grass. Mr. T. R. Billups, a rare hymenopteron, *Tachytes unicolor*, taken at Hayling Island, June 7th; the following species of Coleoptera,—the very scarce *Choragus sheppardi* from Broadstairs, *Molorchus minimus* and *Mycetoporus longulus* from Bookham, and the scarce *Panayceus quadripustulatus*; also two local species of Hemiptera, - *Phylus*

coryli and *P. avellanæ* from Westerham; and the curious-looking homopteron, *Ledra aurita*, from Broadstairs.

September 16th, 1886. R. Adkin, Esq., F.E.S., President, in the chair. Mr. Cooper exhibited a brilliant series of *Triphæna fimbria*, bred from North Devon pupæ; and a long series of *Zygæna filipendulæ*, showing marked variations of the border of the posterior wings. Mr. Adkin exhibited *Lophopteryx cuculla*. Mr. E. Joy, a remarkable variety of *Epinephele ianira*. Mr. Wellman showed a series of *Acidalia bisetata* from Raindean Wood, Folkestone; a long and varied series of *Bryophila muralis* from southern localities; also *B. par* for comparison; likewise *Dianthæcia irregularis*. Mr. W. G. Sheldon brought *Triphosa dubitata* and *Agrotis agathina* from Shirley Heath; some discussion ensued upon rearing the larvæ of the latter species. Mr. J. Jenner Weir brought a specimen of an *Agrotis* taken some forty years since, which has not yet been identified; also a specimen showing the characters of *Agrotis segetum* and *Agrotis suffusa*. Mr. West (Greenwich) exhibited a long and variable series of *Cryptocephalus pusillus* from West Wickham. During the evening donations were made to the Library, Collection and Herbarium. It was announced that, as the Society's rooms had proved quite inadequate on the last occasion, the usual Annual Exhibition of Specimens of Natural History generally would take place at the "Bridge House Hotel" Assembly Rooms, on Thursday, the 25th of November next.—H. W. BARKER, W. A. PEARCE, *Hon. Secs.*

OBITUARY.

HENRY WILLITTS. — Many of our readers will be sorry to learn that Henry Willitts died during the past month, at his residence in Sheffield. During the season of 1885 he collected in the West of Ireland, but a full list of his captures does not seem to have been published. Mr. Willitts will be much missed by the Sheffield entomologists, who are sadly few and far between, as he was one of the best-informed among them, and always willing to assist those to whom he could impart local or general information.

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ARE *CEROSTOMA RADIATELLA* AND *C. COSTELLA* DISTINCT?

By RICHARD SOUTH, F.E.S.

MR. T. J. HENDERSON, of Glasgow, when sending some insects from Scotland lately, included a series of *Cerostoma radiatella* and *C. costella*, concerning which he writes:—"I have a strong impression these are but one species; they appear always to occur together, and intermediate varieties are common enough." Looking at the specimens sent, I am quite inclined to agree with Mr. Henderson, and should be exceedingly puzzled to say whether some of the examples are referable to *radiatella* or *costella*.

My series of each of these insects, from various localities in the South of England, would at first sight appear to consist of two clearly distinct species. Both are more or less variable as regards colour of fore wing; but the broad patch of white or pale ochreous extending along the costa from the base to, or nearly to, the middle, is the distinguishing mark of *costella*. On a careful and critical examination of a very variable series, labelled *radiatella*, I detected a specimen with a faint indication of this costal patch; but this specimen in all other respects differed not at all from other examples of the same form of *radiatella*. I then proceeded to examine the blackish dots, sometimes conspicuous in pale-coloured *radiatella*, with especial regard to the spot situated just above the inner and towards the hind margin. This latter I found to be identical in both insects, not only in size and position, but in being followed by a pale sheen, or, in some

examples of each, whitish patch. Some examples of *radiatella* have a dark streak running through the wing from base to apex; this streak is always more or less distinct as far as the middle of the wing in *costella*, and forms a border to the costal patch. In one example the streak is to be traced right through to the apex. Another feature common to both insects, but perhaps most constant in *costella*, is a short blackish dash from the base to the inner margin. Of dark *radiatella* the head and thorax are of the same colour, but specimens ornamented with white have the head or thorax, sometimes both, also white, or marbled with white. The head and thorax of *costella* are invariably white or pale ochreous. There is no appreciable difference in the hind wings of the two insects. As far as I know the larva of each feeds in May and June on oak.

As many Micro-lepidopterists have probably bred these insects, it would be interesting to have their experience. Possibly the larva of one of these insects may possess some trustworthy character which will serve to separate it from the other more readily than seems possible in the perfect state. Of course in a rough-and-ready way the insects are easy enough to separate, but such a division seems hardly satisfactory. What we want to know is this,—Are *Cerostoma radiatella* and *C. costella*, as they now stand, really two good and distinct species? If the insects are specifically distinct, do forms of the one so closely resemble forms of the other that the species to which each should be referred is difficult to determine?

12, Abbey Gardens, St. John's Wood, N.W.

THE LIFE-HISTORY OF *TEPHROSIA CREPUSCULARIA* (OR *BIUNDULARIA*).

BY THE REV. G. A. SMALLWOOD.

As the wish has been repeatedly expressed that the egg and larva of this insect should be accurately described, and as I have bred it for some years, I will now supplement my former papers (Entom. 161, 181) by giving some notes on the life-history of the species, which, although styled *biundularia* by myself and others (for the sake of clearness merely) in the recent discussion, is the

same species which Mr. Barrett (in an interesting article in the Ent. Mo. Mag. of September last) tells us ought to be called *crepuscularia*. Be the name what it may, I only wish it to be understood that the insect I am about to describe is not a mixture of two, but a well-defined species.

The egg.—In confinement the ova are deposited in small clusters, rarely singly, and are generally covered lightly with scales from the body of the moth. Their shape is elongated oval. They appear to have no indentations or marks, and are of a beautiful pea-green colour.

Larva.—The young caterpillar emerges on the fourteenth or fifteenth day from the egg, which had changed in colour from green to nearly black, and begins to move about very actively. At first sight the little caterpillar is black and white, the latter colour forming several incomplete rings round the body, and a row of conspicuous spots along the lateral area. In three weeks the larvæ begin to show the many variations into which they run. They are grey of various shades, some tinged with orange, some with brown, some with rusty, while others are suffused with mahogany-red. The dorsal area is palest on the anterior and two posterior segments. There is a series of undefined pale blotches on the lateral area, terminating in a decidedly conspicuous pale mark on each side of the anterior clasper. These pale blotches display the ochreous yellow or rosy tint, which varies in different individuals. There is no evident medio-dorsal line, but the dark subdorsal line is seen on segments 4 to 9, ending abruptly on segment 4 in a pair of jet-black spots, which, with a trace of the medio-dorsal line between them, form a transverse series of black spots on the 4th segment. A well-marked velvety dash is placed obliquely on each side of segment 6, forming an arrow-head. The larva is stout and cylindrical, except that the first three segments are drawn together in rest, whilst the 4th segment is decidedly swollen laterally, giving the larva a club-shaped appearance, something like that of *Eurymene dolabraria*. The ventral area is darker than the dorsal, nearly black in some specimens. It is a larva that varies greatly in colour and shade, but it has at any rate five constant characters, viz.:—(1) The arrow-head on segment 6, (2) the pale lateral blotches, (3) the conspicuous pale mark on the side of the anterior claspers, (4) the swollen 4th segment, and (5) the three transverse black spots on segment 4.

The larva generally holds itself erect at an angle with the food-stalk, with the first four segments thrown forward. It feeds to my knowledge on oak, elm, plum, and rose. I have never seen it on larch; but it feeds probably on many other trees, and takes eight or nine weeks to come to maturity.

The pupa.—The larva simply buries in the ground and spins no cocoon, and changes to a pupa of the common chestnut-colour, rather pale, especially on the wing-cases.

The imago.—It would be impossible, if it were not needless, to describe the varieties and shades of difference in this stage. Hardly two are alike, and if there is a second species it certainly cannot be distinguished in the imago. I will, however, notice a few leading types. 1. Ground colour bone-white, finely dusted with grey, the transverse lines being visible only on the wing-rays as black points. 2. The same, but well marked with strong, black, transverse lines. 3. Grey-brown, much dusted with darker, and slightly tinged with ochreous. 4. Sooty black, a few grey scales on the sides of the thorax, and a white line beyond the invisible subterminal line. 5. Ochreous grey, a band of warm brown or ferruginous colour following the black transverse lines. (I believe this is the original *biundularia*, so named from the two conspicuous bars or waves formed by the transverse line and its accompanying band or wave of warm colour). 6. Specimens from Perth are larger and better marked than any of the preceding, the ferruginous band becoming umber-brown.

The moths generally emerge in May; but I have seen it a month earlier, and received it alive this year (a backward year) from Mr. Harrison, of Barnsley, on June 25th. In the South of England a remarkable form or "subspecies" of this moth appears on the wing in March, and produces a second brood at the end of July. The question, Is this a distinct species? will only be solved finally when we know more of the egg and larva of this double-brooded insect. It may prove to be a distinct species; but if so, it will not be to the credit of south-country entomologists if the doubt is allowed to remain much longer. If, on the other hand, it be *not* a distinct species, we have to observe these two remarkable facts, *viz.*, that in the South of England the first brood continues to fly from the beginning of March till the end of May (a most unusual duration), and also that a double-brooded variety of the species exists side by side with the single-

brooded type, and constantly retains its own economy. In view of these difficulties, and believing, as I do, from the remarkable fineness of Scotch specimens, that this is originally a northern insect, the idea constantly recurs to me, Have we here discovered, in this double-brooded insect, an instance of how a *variety* originates in the altered conditions of a southern climate, and developes its own characteristics and habits, until it becomes a separate species? If so, this insect appears to be now in the act of transition, having its own constant characters, which still have not yet developed into any conspicuous or specific differences.

I had two or three ova of this insect five years ago, laid in July, and reared two moths, which came out at the end of February. Speaking from memory, I can only say that those larvæ *strongly resembled* the species described above, though paler, perhaps, more obese, and less distinctly marked. The resemblance in fact was so strong in the larva, as it is in the imago, that I am convinced that any definite difference (as I said before) will be found, if at all, in the ova.

At any rate, I hope south-country entomologists will keep this subject in view in March and July next, and make an effort to obtain a more accurate knowledge of the egg and larva of this double-brooded insect, which is found, I believe, only in the South of England.

Willington, Burton-on-Trent, October, 1886.

TEPHROSIA CREPUSCULARIA AND T. BIUNDULARIA.

BY RICHARD SOUTH, F.E.S.

SEVERAL entomologists have taken part in the exceedingly interesting discussion, recently conducted in these pages, concerning the identity of *Tephrosia crepuscularia* and *T. biundularia*. As the facts adduced for and against are probably fresh in the minds of my readers, recapitulation is unnecessary.

Probably there is nothing in the arguments brought forward by Mr. Tutt, or those who think with him, to shake the opinion of others who consider the insects identical. At the same time the views of the Rev. G. A. Smallwood, and other entomologists who agree with him, will hardly be accepted by those who consider slight

differences of colour, in conjunction with an intermediate date of emergence, as important determining factors in the separation of these insects. This entomological dead-lock, as it were, arises from the very opposite ideas each side engaged in the controversy entertain as to what constitutes a species.

Now there is perhaps no more unsatisfactory term employed in biological classification than your "species." Many able naturalists have defined the term, and all such definitions embrace two fundamental principles,—resemblance of certain characters between individuals, and a knowledge that such individuals have descended from a single pair, or from pairs identical in every respect. If it were permissible to establish species bred in a semi-domesticated state on these principles alone, we should soon augment the number of British Lepidoptera to a considerable extent. Judging by the limited experience I have had in this direction, I am inclined to think that it would be quite possible to construct three or four "species" out of any insect given to variation.

Returning to the subject more immediately under consideration, I have before me at this moment a compound series of the two so-called species. The individuals comprising the series are from various localities in Great Britain,—such as Brentwood, in Essex; Marten Drove, Wiltshire; Lynton, North Devon; Barnsley, Yorkshire; and Perthshire, Scotland. The palest specimen in the whole series is one in the Wiltshire detachment, taken end of March, and the darkest normal examples are the Perthshire contingent; whilst those in the Barnsley division are variable, both as regards ground colour and intensity of marking. Curiously enough two specimens, which show a tendency to assume the suffused blackish grey form, said by Mr. Tutt to be peculiar to the May and June insects (Entom. 98), are almost identical with an example in the Wiltshire group, captured at the end of March. The North Devon specimens differ from all the others in ground colour, which is a *lustrous* pale grey. These were taken on trunks of larch, together with *T. consonaria*, in May. The only specimen in the entire series with which the North Devon insects agree in character of marking is one in the Wiltshire section, but it differs therefrom in ground colour, as it has a brownish tinge. I contend, however, that it would be stretching

a point somewhat unduly to argue that this Wiltshire example is distinct from the North Devon specimens because it has a slightly different colour, and was taken a few weeks earlier. But suppose we admit that it is distinct, then what are we to say about certain other examples in the Wiltshire group, which are as like Essex June specimens as this insect from widely distant localities can be? The question of earlier or later emergence apart,—if the Wiltshire insects are *crepuscularia*, so also are those from Essex; or if the specimens from Essex are *biundularia*, then so also are those from Wiltshire. This is tantamount to saying that the insects from both localities are of the same species, and as such I certainly regard them.

The fact of an insect appearing in the perfect state at three distinct periods of the year is exceptional only in one respect,—that is, the first and third flights of *crepuscularia* would appear to be quite independent of the second or middle brood. I am of opinion that the first of these broods cannot be other than an earlier emergence, influenced by climate in the first instance and perpetuated by inheritance; the third brood, which by the way is only partial, is a natural sequel to precocious emergence; the imagines of the intermediate brood are the stock from which the earlier form has been developed. These last still retain, as regards the time of emergence, the original habits of the species. Considered in this light, the occurrence of double- and single-brooded forms of a species in one and the same locality is not so incomprehensible as at first it would seem to be, especially if we at the same time have regard to the probable origin of this species.

All the European species of the genus *Tephrosia* in the larval state are partial to birch, alder, and fir; this is more especially so with *crepuscularia* and *punctulata*. As we now find these two species have attained a higher latitude than their congeners, we may suppose that they were the forms best fitted to push forwards at the time when, after the ice age, animals and plants were returning northwards from Central and South Europe. *Crepuscularia*, as it followed the receding cold, would seize on every favourable locality and establish itself therein. In course of time, as the climate became warmer, first a portion, then the whole, of the imagines would be induced to emerge at an earlier period of the year, and the larvæ would take to other food than that afforded by the Betulaceæ and Coniferæ. Then the early

emergence would give rise to a partial second brood, and finally the insect would become regularly and completely double-brooded, as is now the case in the warmer parts of Central Europe. In Great Britain the species is single-brooded, except in the South of England, where, as I have previously adverted to, it still retains its original habit as a single-brooded insect in part, though it is at the same time gradually merging into a double-brooded state. By the time this change is completely effected the single-brooded element will probably have ceased to exist in this species in the South of England. The British entomologist of the future, who may consider the double-brooded insect of the south distinct from its single-brooded brother of the north, will perhaps have nothing more trustworthy than colour and ornamentation to guide him in forming his separate series of each, unless he should consider all northern specimens *biundularia*, and all southern examples *crepuscularia*, without regard to such unstable characters as marking and coloration.

12, Abbey Gardens, St. John's Wood, N.W.

BOMBYX QUERCUS, CALLUNÆ, OR ROBORIS?

BY MISS K. M. HINCHLIFF

WILL someone disentangle the synonymy of *Bombyx quercus*, and describe its varieties? I have two varieties (or species) of this insect, one taken in England, the other in France, and am totally at a loss to name them, for every author and list-compiler seems to have different and conflicting views on the subject.

Newman describes and figures one species, *quercus* (the one I have taken in this country), simply mentioning *callunæ* as being longer in pupa. Kirby, on the contrary, calls Newman's *quercus*, *callunæ*, and describes as *quercus* the one I have taken abroad, which is decidedly redder in colouring, and has the band on the hind wings less curved; he makes no mention of *roboris*. Staudinger's Catalogue of 1861 gives one species, *quercus*, with ab. *roboris* and v. *callunæ*, his later one changing to v. *roboris* and ab. *callunæ*. Doubleday, in the 2nd edition of his Catalogue, published in 1866, makes *roboris* a variety of *quercus*, but *callunæ*

a separate species; in his Supplement of 1873 *callunæ* is a synonym of *quercus*, and *roboris* a separate species with *quercus* as synonym. South, in his recent List, gives only one species *quercus*, with *callunæ* and *roboris* as varieties. Thus it will be seen that every author has a different opinion.

If the following questions could be answered I should be much obliged:—1st. Is the species figured by Newman the one usually taken in this country? 2nd. Is it *quercus*, *callunæ*, or *roboris*? 3rd. If it is *quercus*, what are the distinctions between it, *callunæ*, and *roboris*? and are the two latter natives of Britain?

It seems to me that a new work on British moths, more in harmony with our lists, and describing all varieties, is much needed. Lang's 'European Butterflies' might well be taken as a model.

Worlington House, Instow, N. Devon, October 18, 1886.

[Various more or less important differences occur in specimens of *Bombyx quercus* occurring in various parts of Europe, and specimens so varying have been named, figured, or described by entomologists in the past. As regards *callunæ*, Palmer, and *roboris*, Schrank, the two varieties found in Great Britain, authors do not seem quite in accord. I apprehend that *quercus*, L. S. N. x. 498, is the type-form most generally distributed in Europe, including England; *callunæ*, the form which occurs in moorland and mountainous districts, and differs from the type principally in the darker colour of the female; and *roboris*, a variety of the male which has the fulvous bars of the fore wings wider than usual, and broad fulvous margins to the hind wings. The opinions of others would be exceedingly interesting.—R. S.]

SPURIOUS VARIETIES OF LEPIDOPTERA.

BY JOHN T. CARRINGTON, F.L.S.

DURING the past month I have received, as Editor of this magazine, several complaints from correspondents, to the effect that some person or persons had attempted, and indeed, in one or two instances succeeded, in palming off as varieties of British Diurni, ordinary specimens which had been either painted,

stained, or in some other manner coloured to represent unusual forms. So cleverly were they manipulated, that more than one of our oldest and most experienced entomologists have been imposed upon, not only by the excellence of the fabrication, but likewise by that childlike innocence (so ably depicted in the 'Heathen Chinee') with which these negotiations were conducted by the fabricator or his agent. Of course these people had "no idea" that there was anything specially peculiar in the varieties which they had "bred"—but that, as they appeared somewhat unusual, they were willing to allow their correspondents to have them for trifling sums of two shillings each variety and upwards.

As a warning to variety hunters, the following communications, selected from others received by me, are set forth.

Extract from a letter to Mr. Marsden, of Gloucester, from the vendor:—

"I am obliged to you for your letter of the 9th, and would have replied before, but was away from home. I now send you all (six) the blue-tipped varieties I have, with the exception of two in my private collection. I have not disposed of any, neither have I tried to. I only obtained ten really good ones, and will take sixteen shillings for the eight I have sent you, which I think you will consider a reasonable price."

The following communication I have received from Mr. Herbert W. Marsden, of Gloucester, above referred to:—

"Early last month I received by post, from a total stranger, two specimens of *Vanessa urtica*, the apical spot being blue instead of the customary white. Sender asked 3s. each for them, and apparently took me to be an amateur collector; and added that he had bred a few similar specimens from a very large number of pupæ. Believing them to be genuine I replied that, although of no use to me personally, if he would send me all there were I would dispose of them for him. A few days later I received a letter from a well-known and highly-respected country collector and dealer, from which I learnt that he also had received two similar specimens from same source. Some days later six more were sent me; and in the accompanying letter the owner says he had only obtained ten really good ones,—eight sent me and two in his own collection; thus not accounting for the two sent my friend. He also adds,—'I have not disposed of any, neither have I tried to.' As shown above, this is a deliberate falsehood, and this aroused my suspicions that the whole affair was an attempt at fraud. In the meantime I had sent one of the original specimens to Mr. Frederick Bond, which I have since received back. He

seems to think this specimen may be genuine. I have also had some correspondence with Mr. Philip Crowley and other well-known gentlemen, and, from the tenor of their letters and other facts named by them, I think it is my plain duty to make the above facts public, and shall be very glad if it can be shown that my suspicions are unfounded; but if the sender of these specimens to me is in any way wronged by above paragraphs, why, it is his own fault for making the mis-statements pointed out above. The eight specimens above referred to have been sent to the Editor of the 'Entomologist.'—H. W. MARSDEN; 37, Midland Road, Gloucester, October 22, 1886."

The following is from Mr. Philip Crowley, Waddon House, Croydon:—

"Some few weeks since I saw a very pretty specimen of *Vanessa atalanta* for sale at Messrs. Stevens' Auction Rooms, with the usual white spots on the fore wing of a beautiful pale pink colour. Since then I have had sent me by post, for approval, a very pretty variety of *V. cardui*, which was said to have been taken last year at Addington. This also had the usual white spots on the fore wings of exactly the same pink as the before-mentioned *atalanta*. I examined it, and returned it, with my opinion very plainly expressed. Last week I had a specimen of *V. urticae* sent me, asking if I considered it genuine. In this specimen the usual white spot on the wing was of the same blue colour as the other blue spots. This I examined under an inch power, and plainly saw very minute specks of blue pigment, not only on the white, but also scattered over the black scales round the spot. It being evident that some fellow is doing his best to deceive collectors with varieties, let me caution them to be very shy of any which have a few spots of an unusual colour. I may add that since I saw the before-mentioned specimens I have tried a few experiments, and find it a very easy thing to colour the white spots in butterflies either pink, blue, or green, or any other colour, so well that detection is almost impossible. I would add that the person who tried to do me addressed his letter from about two miles from my address.—PHILIP CROWLEY; Waddon House, Croydon, October 9, 1886."

Mr. J. Jenner Weir writes to me on the 10th inst.:—

"I fear the ruse has succeeded in several instances. I was shown a *Vanessa urticae* last Thursday which has certainly been coloured; and the letter was from the same man, who has also, I find, sent letters to others with specimens, including myself."

I hope that this attempt to improve upon Nature was rather intended to be a practical joke than a deliberate fraud; in which case the fabricator will doubtless return the money received for

such "improved" insects as he may have sold, and be satisfied with the kudos earned by his artistic efforts.

The specimens referred to by Mr. Marsden as having been sent to me are quite safely in my possession, and will be at the service of the sender to Mr. Marsden, after I have exhibited them at the next meeting of the South London Entomological Society, if he will make an appointment to see me, either immediately after that meeting or otherwise.

As most entomologists know, there is little difficulty in making varieties, and certainly no credit, when such are imposed upon the unwary as the real thing. I have seen many such *made* varieties during my entomological experience, probably one of the most extraordinary being a *Colias edusa* which appeared with the monogram of its captor cleverly indicated in deep crimson colour upon each of the anterior wings. I need hardly say that this was not intended as an imposition, but was the result of certain experiments to find out whether several suspicious-looking specimens of *C. edusa*, which were offered for sale, had been manufactured.

In the particular varieties of *Vanessidæ* now under discussion, the white markings of the wings only have been treated, and these generally turned into a brilliant steel-blue or pink colour.

Savage Club, Savoy, W.C., October 26, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS AT THE LIZARD.—It may be of interest to your readers to know that I have seen another specimen of *Anosia plexippus* at the Lizard this year. Last year I saw four specimens, three of which I captured, as recorded (Entom. xviii. 291). Judging from the fact of only one specimen being seen in the locality this autumn, the insect does not appear to have bred freely, if at all, in the neighbourhood. I was hoping to have found the larva this year, and thought that it might occur on *Vinca major* or *V. minor*, as I suppose they are the nearest British allies of the *Asclepias*, its native food-plant, but was unsuccessful. Amongst other captures this season in Cornwall has been the larva of *Acronycta alni*, which unfortunately died.—ALFRED H. JENKIN; Trewirgie, Redruth, October 13, 1886.

ANOSIA PLEXIPPUS NEAR SWANAGE.—Early in September, while passing a cottage near Swanage, a woman gave my son a large foreign-looking butterfly, which she said her husband had caught in a clover-field hard by. I have since found that it is *Anosia plexippus*.—GEORGE C. STENNING; The Parsonage, Beaulieu, Southampton.

ANOSIA PLEXIPPUS IN BOURNEMOUTH.—Lepidopterists will be interested to learn that a fine specimen of this butterfly has recently been caught in this town by T. Watts, Esq. (of Hilda, Bradbourne Road), who at my request has kindly furnished me with the following account of his capture:—"Strolling along the Westover Road on the 30th of September I saw a large butterfly flying above the road. Watching it for a few minutes it came down and settled on a single dahlia, and leaning over the railings I caught it between my finger and thumb." Great credit is due to Mr. Watts for the manner in which he managed, without any entomological appliances, to take and kill the insect without doing it the slightest injury. It is a magnificent male, measuring four and a half inches from tip to tip, and with the exception of a small chip on the hind margin of the right primary it is absolutely perfect, clearly indicating that it has been bred in the neighbourhood. Thanks to the generosity of the captor the specimen is now added to my collection, and I shall be pleased to show it to any entomologist who may happen at any time to visit Bournemouth. Mr. Jenner Weir, just ten years ago, in commenting upon the occasional occurrence of *plexippus* (*archippus*) in this country, drew attention to the wide range of this Danaid in America, its native habitat, and expressed his belief that the species would probably become naturalised in this country, as it had been in Australia, New Zealand, and New Guinea. The well-authenticated records of captures since, afford ample confirmation of the correctness of this gentleman's view. If *plexippus*, with its capability of adaptation to varying climatic conditions and power of flight, enjoy in this country the same immunity from the attacks of insectivorous enemies, which Bates, Trimen, and other naturalists ascribe to the Danaidæ generally, its rapid propagation may be looked upon as a matter of certainty. Henceforth our list of the British Rhopalocera will be incomplete without the addition of the family "Danaidæ."—W. McRAE; Bedford House, Bournemouth, October, 1886.

ANOSIA PLEXIPPUS IN GUERNSEY.—I have much pleasure in recording the capture, for the first time in Guernsey, of a fine specimen of *Anosia plexippus*. It was taken on Saturday, 2nd of October, by Col. A. H. Collings, in his garden on the outskirts of the town (St. Peter's Port).—W. A. LUFF; 17, Victoria Road, Guernsey, October 11, 1886.

VANESSA C-ALBUM NEAR HEREFORD.—This year there has been an unusual abundance of this species, while last year and the year previously they were very scarce. I have had about 250 pupæ brought to me by hop-pickers, who say there were scarcely any in some of the yards, while in others they were found by dozens.—J. HORNE; The Brewery, Hereford, October, 1886.

COLIAS EDUSA AND DIASEMIA LITERATA (LITERALIS) IN SUSSEX. The question of the presence of *Colias edusa* within our coasts in each year appears to be one of some interest; and as it has not, so far as I am aware, at present been recorded during the past summer, it may be worth noting its occurrence. While collecting in East Sussex in August last I observed two specimens,—one on the 11th and another on the 29th of that month. I also took, in the same locality, a solitary example of *Diasemia literata*.—ROBERT ADKIN; Lewisham, October, 1886.

COLIAS EDUSA.—I have seen but one specimen of this butterfly this year,—a fresh-looking female, leisurely flying along the sea-wall at Maldon on October 4th.—EDWARD A. FITCH.

IS THYATIRA BATIS DOUBLE-BROODED?—I was sugaring in the New Forest in the early part of June last and saw large numbers of *T. batis*, taking about a dozen, some of which were considerably worn. On the 1st of September I was again in the Forest, and to my surprise took five specimens of *T. batis* in perfect condition. Can they possibly have been a second brood?—H. L. EARL; Portree, Manchester, September 23, 1886.

[*Thyatira batis* has previously been observed in England, not only in September, but also in October. It would appear, then, that in some years there are certainly two distinct flights of the species in this country. Probably, however, in such years only a small percentage of the descendants of the June and July imagines attain the perfect state in the autumn months. In the more southern portion of the extensive area inhabited by

T. batis there may possibly be two generations of the insect in each year.—R. S.]

SECOND BROODS.—With regard to *Timandra amaturia* being at times double-brooded in the natural state (Entom. 231) I have this season seen two instances of it. In Dorsetshire I noticed a fine specimen in the third week of August, and a somewhat worn one on September 6th. In one locality in this district we this season met with a second brood of *Lycæna minima* (*alsus*). I noticed the first specimens on August 10th; the first brood had been numerous. In Dorsetshire, on the sea-coast, a few specimens of *Lycæna ægon* were just emerging on August 17th; this also occurred about the same date last season in the same locality. Would not these specimens be a second brood? It would surely be late for one of a succession of broods. I have never visited the locality at the time this butterfly should be out according to our books. All the commoner species of the Lycænide have again been somewhat abundant in localities I have visited. *L. icarus*, however, has not been so excessively so as it was last season. Has *Lycæna arion* ever been known to be double-brooded? Might this not be probable, from the general tendency there appears to be amongst the “blues” to be so? This species has become, in Gloucestershire, one of the rarest butterflies. From places where, twenty years ago, it managed to hold its own, it has now entirely disappeared. I am afraid this is not from natural causes only.—T. B. JEFFERYS; Clevedon, September 17, 1886.

ACHERONTIA ATROPOS IN SHETLAND.—During a visit to Lerwick this summer I was fortunate enough to secure three specimens of the above-named Sphinx; two were taken in a potato field near Lerwick, and the third at Stoney Hill. The various lists I have been able to consult make no mention of this species, nor indeed of any Sphinx, having been so far taken in the Shetlands. If this is correct, we have an important addition to the already very interesting fauna of the most northern portion of the British Isles.—WILLOUGHBY GARDNER; c 18, Exchange Buildings, Liverpool, October 7, 1886. [The occurrence of *A. atropos* in the Shetlands was referred to, Entom. 147.—ED.]

ACHERONTIA ATROPOS IN IRELAND.—It may not be wholly uninteresting to record the appearance of *A. atropos* in this

neighbourhood, particularly as my lamented friend Mr. Birchall, does not mention this (one of his favourite hunting-grounds) as a locality for the insect. Upon returning from Dublin the other day I was informed that a bat had been caught and was awaiting my inspection, and my little daughter added that it had squeaked while in her hand. Upon the cover being raised I found a very large specimen of the death's-head moth; perhaps it would have been happier for my household had I permitted their shameful ignorance of Zoology to continue, as a feeling of consternation took possession of the domestics upon my announcing the dread name of the unusual visitor.—S. R. FETHERSTONHAUGH; Rokeby, Howth, October 9, 1886.

SPHINX CONVULVULI.—I have to record the capture, by friends of mine, of two specimens of *Sphinx convolvuli*, one at Deal, the other near Starcross, South Devon, on the same ground where I recently took *Cullimorpha hera*.—J. JAGER; 180, Kensington Park Road, W., October, 1886.

SPHINX CONVULVULI AT LOUGHBOROUGH. — At midday, on October 4th, a fine light-grey female specimen of *Sphinx convolvuli* was captured at Loughborough Station. It was kindly brought to me alive, none the worse for its journey.—WM. TRISTRAM; 44, Hazel Street, Loughborough, October 10, 1886.

SPHINX CONVULVULI AT WEYMOUTH.—I was fortunate enough to meet with a very fair specimen of this *Sphinx*, sitting on some palings at Weymouth, laying its eggs. I hope that this record of its capture may prove interesting, as it is the first time, as far as I know, that it has been taken in this district. The capture was made in broad daylight, when, I believe, it is rather unusual for the moth to appear. It seemed strange also that it should deposit its eggs on these palings, there being none of its food-plant anywhere near.—A. W. P. CAMBRIDGE; Weymouth College, October 7, 1886.

DEIOPEIA PULCHELLA AND ENNOMOS ALNIARIA AT RAMSGATE. Specimens of these two insects, lately taken at Ramsgate, have just been brought to me for verification. The latter seems now to be well established in this country, but can scarcely be considered as otherwise than a semi-naturalised foreigner.—THEODORE WOOD; St. Peter's, Kent, October 6, 1886.

AUTUMNAL EMERGENCE OF ARCTIA CAIA.—Last June a female *Arctia caia* deposited a batch of ova, from which I have at the present moment larvæ, pupæ, imagines, and some ova which have not yet yielded larvæ.—H. SHARP; 23, Union Street, London, W.

[Some entomologists, who rear this species for the sake of varieties, get three distinct broods annually by rearing them in heat, and the latter broods are usually most prolific in variation.—J. T. C.]

OCNERIA DISPAR.—The Rev. J. Seymour St. John asks (Entom. 250) why so many of the females of *Ocneria dispar* that he breeds are cripples. It is some years since I reared this species, but I well remember that when I did so my experience very closely coincided with his, and I have little doubt that the number of cripples produced in each instance arose from the same cause. Mr. St. John does not mention the source whence his young larvæ were derived, but as it is very doubtful whether this species has occurred in a wild state in this country for many years past, it may be inferred that they were, as in my case, the offspring of parents inbred for many generations; and if that be so, I think we need not look beyond the generally accepted theory, that inbreeding tends towards a deterioration of species, for a solution of the problem. The impaired vitality would be likely to show in the imperfect development of the wings, and the females being presumably the weaker (although in this case considerably larger) sex, would be likely to be the more readily affected.—ROBERT ADKIN; Wallfield, Lingards Road, Lewisham.

[In confinement the females of *Ocneria dispar* probably have but little chance of employing their wings. The disuse of any organ, generation after generation, tends to produce a cramped or wasted condition in such organ.—R. S.].

OCNERIA DISPAR.—Since finding the larvæ of this species in Warwickshire last year, as recorded (Entom. xviii. 263), I have had a little experience in breeding the moth, and have noticed exactly the same thing as the Rev. J. Seymour St. John draws attention to (Entom. 250), namely the crippled state of a number of the females on emerging. Although I have had some specimens which have not developed in the slightest degree after leaving the pupa, still the greater number of cripples were only crippled insomuch that the edges of their

wings were crumpled, and this seems also to have been the case with Mr. St. John's specimens. I have not so far ascertained the cause of the crippled condition of these individuals, but should imagine that it is due to the insect being unable to free itself from the pupa at the proper time, owing probably to the hardening of the pupa shell. If this be the case, the pupa should naturally be kept damp. There is also another point which has attracted my notice in the breeding of this insect, which is this, that all the males come out considerably in advance of the females. On reference to my diary, I find that out of a large number of both sexes which emerged, 28 males appeared between the 4th and 7th of August, and that from the 10th to the 17th of the same month 35 females emerged in my breeding-cages. I should like to know whether anyone else has noticed this fact in breeding *Ocneria dispar*.—W. H. BLABER; Beckworth, Lindfield, Sussex, October 21, 1886.

OCNERIA DISPAR.—In reply to the Rev. J. Seymour St. John (Entom. 250), I may say that this year I had fifteen female pupæ of this insect, and I consequently congratulated myself on being at least able to breed a nice series to replace some old specimens which I then possessed. I was, however, doomed to be disappointed, as out of the fifteen I only bred one perfect insect. Of the remainder, four were complete cripples, six with just the hind wings crumpled up at the edge, and four with one wing only slightly crippled. I do not think handling the larvæ was the cause, as I always use a camel-hair brush to remove the caterpillars when necessary, and *never* with the hand. Last year I had about the same result, breeding two perfect insects from twenty of their pupæ. Nearly all the males which I have bred have been perfect.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

NOTES FROM SOMERSETSHIRE.—I am sorry to report another season of scarcity, especially as regards Noctuæ, in my neighbourhood. Very few, even of the more common species, such as *Triphæna pronuba*, *Phlogophora meticulosa*, *Anchocelis pistacina*, came to sugar; and even *Polia flavicineta* were much fewer than is usual. I have had only two larvæ of *Acherontia atropos* brought to me this year, though last year so very plentiful. The autumnal butterflies *Vanessa io* and *V. atalanta* were very common. I was in Switzerland and Italy in July, and in both

I found insect life most abundant.—H. W. LIVETT; Wells, Somerset, October, 1886.

LARVA OF *APOROPHYLA AUSTRALIS*.—I took three larvæ on June 4th, feeding on *Silene maritima*. When unable conveniently to get this food-plant fresh they took very kindly to the common garden white pink. They were nearly full-fed when I found them, and in a few days buried themselves in sea-sand at the bottom of breeding cage. On September 24th I had the satisfaction of finding two male specimens of *Aporophyla australis* had emerged in perfect condition. I do not know whether the plant on which these larvæ were feeding has been recorded as a food of this species. The caterpillars differed principally in colour from the description given by Newman—quoting from Guenée. They were of a beautiful glaucous green, with marks much according to Newman. The difference of colour may probably be ascribed to the peculiar green of the *Silene* on which they were feeding.—FRANK E. LOWE; St. Stephen's, Guernsey.

VARIETY OF *MELANIPPE MONTANATA*.—I send for your inspection a variety of *Melanippe montanata*, which I captured last summer near this town. As it is a striking contrast to the suffused example taken by the Rev. H. T. Hutchinson, figured in the 'Entomologist' for 1881, I thought it might be of interest.—C. K. TERO; B 32, Kent Street, Grimsby, October 18, 1886.

[In this very interesting variety the usual dark central fascia of the type is only represented by a small quadrate spot on the costa; another small transverse and somewhat linear patch enclosing the black discoidal spot, and two faint-coloured little dots just above the inner margin. In other respects it is almost or quite normal. Many examples of *M. montanata* exhibit a tendency to the character of marking of which the variety under consideration is an extreme form, A similar form is also met with in *M. fluctuata*.—ED.]

CICADA HÆMATOIDES.—On the 7th of June I took a specimen of this insect in the New Forest, near Rufus' Stone. It was captured whilst flying across a riding in an enclosure.—W. R. BUCKELL; Romsey, Hants.

SIREX JUVENCUS IN YORKSHIRE.—I found a fine specimen of this sawfly in my room this morning.—C. WHEELER; Ingleby Manor, Northallerton, Yorks, September 29, 1886.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *October 6th, 1886.*—Robert McLachlan, Esq., F.R.S., President, in the chair. Mr. W. Bartlett Calvert, of Santiago, Chili, was elected a Fellow, Mr. McLachlan exhibited a number of seeds of a Mexican species of Euphorbiaceæ, popularly known as “jumping seeds,” recently received by him from the Royal Horticultural Society, He stated that these seeds are known to be infested with the larvæ of a species of Tortricidæ, allied to the apple *Tortrix*; they were first noticed by Professor Westwood, at a meeting of the Society held on the 7th June, 1858, and the moths bred therefrom were described by him as *Carpocapsa saltitans* (cf. Proc. Ent. Soc., 2nd series, vol. v., p. 27). These seeds have since, from time to time, been referred to both in the United Kingdom and America. A discussion ensued in which Mr. Pascoe, Mr. Poulton, Mr. Roland Trimen and others took part. Mr. Roland Trimen exhibited, and read notes on, some singular seed-like objects found in the nests of *Termites*, and also in those of true ants, in South Africa. They were apparently of the same nature as those from the West Indies, described in 1833 by the Rev. L. Guilding as *Margarodes formicarius*, which was usually referred to the Coccidæ, as allied to *Porphyrophora*. They were of various shades, from yellowish pearly to golden and copper-colour, and were strung together by the natives like beads, and used by them as necklaces and other personal ornaments, as, according to Mr. Guilding, was the case with the West Indian species. Mr. W. F. Kirby exhibited, on behalf of Mr. John Thorpe, of Middleton, a long series of buff and melanic varieties of *Amphidasis betularia*, and read notes on them communicated by Mr. Thorpe. Mr. Kirby also exhibited, on behalf of Mr. Nunney, who was present as a visitor, a dark variety of *Argynnis aglaia* from Caithness, and a tawny-coloured variety of *Vanessa urticae* from Bournemouth. Mons. Alfred Wailly exhibited a fine series of Saturnias and other Bombyces, mostly bred by him, from South Africa; also specimens of *Dirphia tarquinia*, *Attacus orizaba*, *Platysamia cecropia* and *P. ceanothi*, *Callosamia angulifera*, *C. promethæa*, *Philosamia cynthia*, and other species from Central America. He also exhibited ova of *Saturnia tyrrhea*, pupæ of this and other South African species, and a cocoon of

Bombyx orchadama from Madagascar. Mons. Wailly stated that several of the large South African Saturnidæ formed no cocoons, the larvæ entering the earth to undergo the change to the pupal state. Mr. Trimen said he was able to confirm this statement. The Rev. W. W. Fowler exhibited a number of minute *Acari*, which had been doing injury to fruit trees near Lincoln. Mr. Poulton gave an account of the experiments recently made by him with the larvæ of several species of the genus *Vanessa*, for the purpose of ascertaining the relations of pupal colour to that of the surface on which the larval skin is thrown off, which had formed the subject of a paper read by him last month before the British Association. He also exhibited the frame constructed by him for the purpose of these experiments. The President and Messrs. Trimen, Waterhouse, White, Hall, and others took part in the discussion which ensued. Mr. Slater exhibited a specimen of *Prionus coriarius*, found in Devonshire on fennel, and a specimen of *Calandra palmarum* found alive at Pembroke Dock. Mr. Enock exhibited *Mymar pulchellus*, and a specimen of *Atypus piceus* recently taken on Hampstead Heath. Mr. Elisha exhibited a series of *Gelechia hippophaëlla* (Sch.), bred from larvæ collected at Deal on *Hippophaë rhamnoides*. Mr. Billups exhibited *Echthrus lancifer*, Gr., a species of Ichneumonidæ new to Britain, taken at Walmer on the 15th August last. He remarked that Brischke had bred members of this genus from *Sesia sphegiformis*, *S. formiciformis*, and *Leucania obsoleta*; but that in this country the genus was little known, only one species (*Echthrus reluctator*) being mentioned in Marshall's list of British Ichneumonidæ. Mr. E. A. Butler exhibited a male and female of *Macrocoleus tanaceti* from Bramley, near Guildford; living specimens of *Chilacis typhæ*, received from the Rev. E. N. Bloomfield, of Guestling, Hastings; and a pair of *Harpalus discoideus*, obtained in August last, on a heath near Chilworth, Surrey. Mr. A. J. Rose exhibited specimens of a mountain form of *Lycæna virgaurea*, recently collected by him in Norway. Mr. Champion exhibited *Teratocoris antennatus* and *Drymus pilicornis*, taken near Sheerness. Mr. W. White exhibited specimens of *Proctotrypes ater* (Nees); he also exhibited a specimen of *Chelonia caia* with abnormal antennæ, and read notes on the subject. Mr. Elisha read a paper "On the life-history of *Geometra smaragdaria*." Mr. C. O. Waterhouse communicated a paper

“On the Tea-bugs of India and Java.” During the meeting a telegram was received from Mr. Freeman, of Plymouth, announcing the recent capture, in Cornwall, of *Anosia plexippus*.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. *October 7th*, 1886.—R. Adkin, Esq. F.E.S., President, in the chair. Mr. Billups exhibited *Echthrus lancifer*, a species of Hymenoptera new to Britain, taken by him at Walmer in August last, and contributed notes on the genus *Echthrus*. Mr. West (Streatham), a bred series of *Spilosoma fuliginosa*. Mr. Wellman, examples of second broods of *Melanippe tristata*, *Acidalia emarginata*, *A. rusticata*, and *A. strigilaria*, all reared from ova. Mr. Jager, *Callimorpha hera* (including the variety *lutescens*) taken in the south of Devon; a number of forms of *Bryophila muralis* from Dawlish, the whole series showing a local tendency. Mr. J. T. Williams, *Eupithecia linariata*, bred from larvæ taken July last, which fed up and emerged in about fourteen days. Mr. South, *Sesia culiciformis*, short series of *Mimæseoptilus zophodactylus* and *M. bipunctidactyla*; series of *Thera variata* from Switzerland, England and Scotland; and contributed notes with reference to this latter exhibit. Mr. Elisha, *Agrotis ash-worthii* and *Dasycampa rubiginea*. Mr. Adkin, a number of species of Lepidoptera from East Sussex, among which were varieties of the under sides of *Lycæna icarus* and *L. corydon*, forms of *Crambus tristellus*, *C. geniculeus*, and *Diasemia literata*; and he contributed notes on this last-mentioned species. Mr. J. J. Weir, a variety of *Apameis cardui* from Graham's Town; a white and black specimen of *Colias electra* from the same locality, showing that that species exhibited a similar dimorphic condition of the female to that which obtains in *C. edusa*. Mr. Weir adverted to a note of Mr. G. D. Hulst ('Entomologica Americana,' ii. 104), August, 1886, in which it was stated that the name *Anosia plexippus* was the name the British Museum gave to an insect the rest of the lepidopterological world called *Danaïs archippus*. Mr. Weir, after quoting several authors, said both the generic name *Anosia* and the specific name *plexippus* were long ago applied to this insect, the latter, indeed, for more than a century and a quarter. Mr. Cooper exhibited a brightly coloured variety of *Vanessa urticae*. Mr. Sabine, a variety of

Papilio machaon; varieties of *Zygæna filipendulæ*, including several of the yellow form; the series having been taken in Kent. Also varieties of *Lycæna bellargus*, among which were a number of light female forms and two black males. Mr. Sabine stated that, with the exception of the latter, the whole number had been taken either in the spring or autumn of the present year, and he was of opinion that they were hybrids between *bellargus* and *icarus*, he having on one occasion, at the same locality, taken a male of the former *in cop.* with a female of the latter species. Mr. Weir remarked that the light varieties of the female were undoubtedly hybrids between the two species mentioned by Mr. Sabine, but the curious part of the matter was, that they should have been taken both in the spring and autumn. With regard to the black forms of the male, he had neither seen nor heard of anything of the kind before. Mr. W. West (Greenwich) exhibited two species of Coleoptera from Shirley Heath, viz., *Balaninus rubidus* and *Erirrhinus pictoralis*. Mr. T. R. Billups, a species of *Hydradephaga*: *Colmybetes fuscus*, from which had emerged a lepidopteron, probably *Endrosis fenestrella*, the empty pupa-case being partly visible, and remaining firmly attached to the body of the beetle.

October 21st, 1886.—The President in the chair. Mr. T. R. Billups exhibited the following species of Ichneumonidæ:—*Trogus lutorius* and its rare ally *Trogus alboguttatus*, bred by Mr. R. Adkin from *Chærocampa porcellus*; also a fine series of *Apanteles jucundus*, both sexes being represented, and the cluster of cocoons from which they emerged. Mr. Billups stated these little Microgasterides were bred from the larvæ of *Pieris brassicæ* from Ireland, and which were handed to him by Mr. South. This was the first time the insect had been recorded as having been reared; and the Rev. T. A. Marshall, in describing this new species last year in his 'Monograph of the British Braconidæ,' had but one specimen to work from, a female taken by sweeping in Northamptonshire. Mr. Levett and Mr. Watson exhibited specimens of *Acherontia atropos*. Mr. Helps, *Lasiocampa quercifolia*. Mr. West (Streatham), two yellow varieties of *Bryophila perla* from Margate. Mr. W. G. Sheldon, *Plusia chryson*, *P. jectuce* and *P. pulchrina*. Mr. Ficklin, a long series of *Pædisca sordidana*. Mr. Jager, *Sphinx convolvuli* taken at Starcross, Devon. Mr. Gibb and Mr. Tugwell both exhibited

Zygæna exulans from Braemar. Mr. Tugwell, who also exhibited an empty pupa-case of this species made up among crowberry, drew attention to two examples of the Swiss form of the species in Mr. Gibb's box, and pointed out the difference between them and the variety *subochracea* of White. Mr. Mera, *Eugonia autumnaria* (bred). Mr. Elisha, bred examples of *Dianthæcia irregularis*. Mr. Wellman, a number of species taken or bred during the season — *Zonosoma pendularia*, *Acidalia rusticata*, *Cidaria picata*, *C. sagittata*, and *C. sileacata*. Mr. R. Adkin, *Polia flavicincta*, bred from ova deposited by a moth captured by Mr. Cooper last autumn; and bred examples of *Acidalia inornata*. This gentleman also exhibited, on behalf of Mr. W. Farren, of Cambridge, long series of *Bryophila muralis*, *B. impar* and *B. perla*, the first from Folkestone, and the last two from Cambridge. With reference to this exhibit, Mr. Adkin read some interesting notes from Mr. Farren, pointing out the distinguishing characteristics of *muralis* and *impar*. For the purpose of comparison Mr. Wellman exhibited his very fine series of *muralis*, and Mr. Jager the reddish forms of the same species taken by him at Dawlish. Mr. Weir said, after looking carefully at Mr. Farren's row of *impar* and the row of *muralis* taken by Mr. Wellman, and in the present state of the question, he felt disposed to say *impar* was not a clear species, but it ought to be bred from the larval stage; and it appeared to him that Mr. Farren's *impar* were only dominant varieties of *muralis* in the peculiar district in which they were taken. Several other members concurred in Mr. Weir's remarks. Mr. Carrington said he wished to call attention to the fact that somebody was attempting to pass off on entomologists, at prices varying considerably, stained or otherwise altered *Vanessidæ* as varieties, and there appeared to be a brisk trade doing in such specimens. It would be as well for the members of the Society to be on their guard against purchasing such so-called varieties. Mr. Weir also spoke on this subject, and exhibited specimens of *V. urticæ*, *V. atalanta*, and others, which had been coloured by a friend for the purpose of showing how these species could be treated. Mr. Shearwood exhibited a large number of preserved larvæ, among which were *Toxocampa pastinum*, *Eupithecia irriguata*, the black variety of *Abraxas grossulariata*, *Nola albulalis*, and *Deilephila galii*.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

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[No. 283.]

NOTES FROM NEWBURY.

BY THE REV. C. A. SLADEN.

I HAVE not seen the flower of the hogweed or cow-parsnip (*Heracleum sphondylium*) mentioned as an attraction to moths, and I should like to add it to the list of attractive baits, though others I dare say have already found it so. My experience came about thus:—Wanting to get a series of *Melanippe procellata*, I had some little way to go to the nearest spot where the wild clematis grew, and along the sides of the lane by which I went the hogweed in places grew plentifully. Noticing moths apparently hovering over the plant, I began to examine the blossoms with my lamp, and was surprised to find sometimes two or three moths at supper on one flower-head, and to my relief, when I tilted the flower they dropped into the poison-bottle as quietly as possible. After this find, for two or three nights in the first fortnight in July, I turned my attention to the hogweed; and though I caught nothing rare, I had the pleasure of taking my pick from a great number of moths. There were the following 19 species in plenty:—*Leucania conigera*, *L. lithargyria*, *L. impura*, *L. pallens*, *Axylia putris*, *Xylophasia lithoxylea*, *X. monoglypha* (*polyodon*), *Apamea didyma* (*oculea*), in its numerous forms, including the black variety with or without the white or yellow reniform spot; *Miana strigilis*, *M. fasciuncula*, *Caradrina morpheus*, *C. taraxaci* (*blanda*), *Agrotis segetum*, *A. exclamationis*, *Noctua triangulum*, *N. brunnea*, *N. baia*, *Melanippe procellata*, *Phibalapteryx tersata*. At the same time I caught on

the wing, amongst other things, *Heptamelus humuli*, *Odonestis potatoria*, *Cymatophora duplaris*, *Toxocampa pastinum* (only 1), *Boarmia repandata*, *Asthena luteata*, *Acidalia dimidiata* (scutellata), *A. trigeminata*, *Cabera exanthemata*, *Abraxas grossulariata*, which several times deluded me into capturing it, until I recognised its flapping flight; *Ligdia adustata*, *Melanippe unangulata*, *M. sociata*, *Scotosia retulata*, *Cidaria fulvata*, *C. dotata* (pyraliata).

While on the subject of baits, I am glad to see Mr. Harcourt Bath, in the October number of the 'Entomologist,' has mentioned sunflowers as another attraction, and I hope to avail myself of this bait another season.

I should like also to notice some varieties bred this season:—

(1) *Cabera pusaria*. Very white, the transverse lines hardly distinguishable, but on each fore wing a short broadish black streak, just above and parallel with the inner margin, and about halfway between the base and hind margin; there is also a black spot at the anal angle of each hind wing.

(2) *Arctia menthastri*. A dark variety, having the black spots in the centre of the fore wings large, and amalgamated into two almost uninterrupted lines crossing the wings and much angled towards the hind margin; there are also five large and wedge-shaped spots on the hind margin.

(3) *Zygæna filipendulæ*. The three pairs of spots are united. A few years ago I bred one yellow variety from a number of cocoons picked here.

I have also a beautiful variety of *Lycæna corydon*, female, of which I caught some numbers several years in succession at one particular spot, when living in Wiltshire. The ground colour of the wings is silvery blue, as in the male, but with the normal hind-marginal row of spots on both fore and hind wings. The underside of the wings is the usual colour of the female, but in specimens the spots vary, coalescing and forming long streaks. I have now only four specimens of this variety left, and I went down this year, and once before, to get some more, if possible, but I was unsuccessful on each occasion, the day turning out badly, and hardly a butterfly on the wing or to be found at rest.

Looking through my list of captures, I find that during the six years I have been here I have caught, within a range of two or three miles, 335 species of Macro-Lepidoptera, comprising

41 Diurni, 36 Nocturni, 3 Drepanulidæ, 11 Pseudo-Bombyces, 132 Noctuæ, and 112 Geometræ, and I have no doubt this list would be largely increased if the country round were thoroughly and systematically worked.

Burghclere, Newbury, October 12, 1886.

A MONTH IN NORTH CORNWALL.

By W. S. RIDING, M.D., B.A.

TREVALGA, where I was staying last September, is situated on the north coast of Cornwall, between Boscastle and Tintagel. It is elevated some 200 feet above sea-level, and backed a short distance inland by hills rising 700 or 800 feet. Like the rest of the county, it would be treeless were it not for the wooded valleys trending seawards. The chief of these are that at Boscastle, where the Vallency runs over a rocky bed between overhanging alders and willows, with a sprinkling here and there of ash and oak, and that at St. Knighton's Kieve, on the west, where a nameless stream falls in a cascade of 40 feet, and winds its course through a pretty glen wooded with beech and ash, larch and pine, to the Rocky Valley, known well to every landscape-painter since Creswick's time. Both valleys are luxuriantly clothed with the usual plants of such localities, hemp-agrimony and golden-rod being especially abundant. One point of interest to the entomologist is the unusual growth of ivy, creeping over cottages and outhouses, covering ruined walls, on boulders of rock, and somewhere in most of the hedges. The lover of ferns, too, can find most of our native species, and amongst them *Osmunda regalis* in fair abundance, *Hymenophyllum tunbridgense*, and, if he does not mind wet feet and soiled clothes, *Asplenium marinum* in the shaded crannies of the rocks; and, with the help of a scaling-ladder, *Adiantum capillus-veneris* growing wild on the cliffs. The geological formation is Devonian slate and schist, the Devonian system being overlapped by the Carboniferous between Trevalga and Boscastle. From the stratifications being unequally acted on by denuding influences, the exposed rocks look like fretted and chiselled ruins of ancient castles, which the imagination can easily associate with the legends of the neighbourhood.

Sugaring inland was unprofitable; but on the coast, besides the usual autumnal species, *Anchocelis lunosa*, *Phlogophora meticulosa*, *Agrotis suffusa*, *Hydrécia micacea*, &c.,—the local insects, *Polia xanthomista* var. *nigrocincta*, *Polia flavicincta*, *Aporophyla australis*, *Epunda nigra*, *E. lichenea*, and *Agrotis saucia*, were attracted. I think it probable, from the similarity of the districts and the abundance of the food-plants, that *P. nigrocincta* is sparsely distributed along the coast of Cornwall. Only two males and a few females were taken; the former were somewhat worn, though one was taken on September 6th (this was probably owing to the unusually rough weather about that time). The insects did not put in an appearance on very windy nights. The females are larger than the males (males, 1" 5''; females, 1" 6''). None were found after September 20th. The *Polia flavicincta* were grayer and darker than the specimens I took near London some years ago, which seem to have a more general diffusion of the yellow colour. In many parts the ivy was in full flower towards the end of the month, and became very attractive to insects. Unfortunately the weather was unpropitious, but I took *Nyctina socia* (*petrificata*), *Polia flavicincta*, *Epunda lichenea*, *Anchocelis pistacina*, &c., off the blossoms. In this part of Cornwall the fine days seem generally to be accompanied by a wind, which has a detrimental component from the east; and the warm south-west winds, which would otherwise afford suitable entomological evenings, too frequently bring with them wet and fog.

By beating in the valleys, during the daytime, many larvæ fell from the alder, willow, oak, beech, elder, larch, &c. Amongst others those of *Notodonta ziczac*, *Lophopteryx camelina*, *Thyatira derasa*, *Drepana binaria* (*P. hamula*), *Selenia tetralunaria* (*illustraria*), *Gnophria rubricollis*; besides the usual supply of *Dasychira pudibunda*, *Amphidasys betularia*, *Cabera exanthemaria*, &c.; and many other larvæ, Geometræ especially, which I cannot name with certainty till their appearance as imagines. Larvæ of *Eupithecia virgaureata* were shaken off the golden-rod, together with those of *E. castigata*; and those of *Spilosoma fuliginosa* and *Bombyx rubi* were frequently met with. A considerable number of pupæ of many different species were taken from under the moss and tufts of grass on old walls, and at the roots of trees. The day-flyers were represented mostly by

Gonopteryx rhamni, *Vanessa io*, *V. urticæ*, *V. atalanta* (in great numbers), *Pararge egeria*, and worn fritillaries. The blues were scarce, and limited to *Lycæna icarus* and *L. astrarche*. The Geometers were few and far between, and these only the generally-distributed autumnal insects.

25, Endsleigh Gardens, N.W., October, 1886.

NOTES ON MICRO-LEPIDOPTERA.

BY ALFRED THURNALL.

ALTHOUGH Tortrices have not been quite so abundant this season as last, I have managed to obtain a fair number of species, of which I may mention, excluding the very commonest, the following:—

Tortrix sorbiana, beaten and bred from oaks in July. *T. forsterana*, a series bred from larvæ and pupæ found between ivy leaves at Whittlesford.

Dichelia grotiana, three only beaten from birch; always seems more or less worn.

Rhacodia caudana, the var. *excavata*, beaten from Poplar.

Penthina corticana, common amongst birch at Wanstead. *P. gentiana*, bred freely from Teazle heads, July to September. *P. sellana*, Boxhill, and also near Gravesend, scarce. *P. fuligana* (*carbonana*), a series bred from Wicken pupæ.

Antithesia salicella, Wanstead, at rest on willows, end of July.

Spilonota trimaculana, beaten from hawthorn, not common. *S. rosæcolana*, one only beaten from rose at Loughton.

Aspis udmanniana, larvæ very common on bramble.

Sideria achatana, bred rather freely from hawthorn.

Sericoris bifasciana, rather common at Wanstead, flying around some Scotch firs.

Roxana arcuana, flying over fern in the forest.

Euchromia purpurana, flying amongst *Sonchus arvensis*, beginning of July, near Gravesend.

Orthotania striana, males, flying over rough grass in July.

Sciaphila nubilana, very abundant in some districts amongst hawthorn.

S. hybridana, bred from flowers of Compositæ.

Sphaleroptera ictericana, bred from hawkweed, and also flowers of *Lychnis*.

Capua favillaceana, rather local amongst oaks in June.

Phoxopteryx uncana, common amongst birch and ling. *P. comptana*,

swarming at Boxhill in April, and again in August. *P. mitterpacheriana*, a few bred from folded beech leaves gathered in the autumn of last year. *P. upupana*, three beaten from birch in June, but only one worth pinning.

Grapholitha ramella, local, among birch, and bred from the catkins. *G. nisella*, not rare on poplar trunks at Wanstead. *G. cinerana*, one only, on poplar trunks at Wanstead. *G. subocellana*, beaten from willows at Loughton, &c. *G. nævana*, bred freely from shoots of holly.

Phlæodes tetraquetiana, very common amongst birch. *P. immundana*, beaten from alder in May, rather rare. *P. demarniana*, beaten from birch in June, scarce.

Padisca bilunana, bred from birch catkins. *P. profundana*, beaten from oak and whitethorn in July.

Ephippiphora brunnichiana, ten males and nine females bred from coltsfoot roots, dug up in the winter. *E. trigeminana*, larvæ common at roots of ragwort in November. *E. fenella*, about thirty bred from roots of mugwort dug up in April at Whittlesford. *E. nigricostana*, a series bred from *Stachys* stems from same locality in May. *E. obscurana*, bred rather freely from galls gathered in the forest in the winter.

Semasia ianthiana, larvæ tolerably common, but local in spun-together berries of hawthorn in September. *S. rufillana*, bred freely from wild carrot heads gathered late in the autumn.

Coccyx strobilella, two only bred from a large number of fir cones picked up at the end of April. *C. splendidulana*, bred from oak galls.

Heusimene fimbriana, three bred from oak galls.

Retinia buoliana, bred from shoots of Scotch fir. *R. pinivorana*, common at Wanstead, flying round firs.

Carpocapsa grossana, bred sparingly from beech mast.

Stigmonota leguminana, one small specimen, the sole result of several evenings' work! *S. perlepidana*, common in one spot at Loughton, flying high in the hot sunshine. *S. internana*, the males not uncommon, Loughton, &c. *S. compositella*, captured at the same time, scarce. *S. flexana* (*weirana*), twenty-eight bred from united beech leaves gathered at Loughton in October. *S. nitidana*, bred sparingly from oak leaves gathered at Wanstead. *S. regiana*, several from larvæ spun up under sycamore bark. *S. germarana*, nine beaten from oak beginning of June. *S. roseticolana*, twenty-seven bred from rose "hips" gathered in September; they require rotten wood to spin up in.

Dicrorampha politana, not uncommon at Leyton, &c. *C. sequana*, local, below Gravesend, &c. *D. simpliciana*, bred sparingly from mugwort roots.

Pyrodes rheediella, flying around hawthorn in May.

Catoptria albersana, three or four beaten from honeysuckle, and what

must be the larvæ in the folded leaves beginning of October. *C. juliana*, common at rest on oak trunks at Wanstead. *C. hypericana*, bred freely from young tops of *Hypericum* gathered at Boxhill in May. *C. candidulana*, very common both in the larva and imago states in the Thames Salt Marshes. *C. fulvana*, scarce, among thistles, &c., Boxhill. *C. cacimaculana*, common near Headly lane in July. *C. æmulana*, a series bred from flowers of *Aster tripolium* gathered in October.

Lobesia reliquana, common in the forest, &c., flying around the pollard oaks.

Eupecilia nana, swarming over birch shrubs at Wanstead. *E. maculosana*, flying in the sunshine over blue bells. *E. angustana*, generally common. Some specimens taken below Gravesend are exceptionally fine. *E. affinitana*, bred from dead stems of *Aster tripolium*. *A. udaria*, bred very sparingly from *Alisma plantago* stems.

Argyrolepis zephyrana, seven bred from roots of wild carrot. *A. badiana*, larvæ in seed-heads of burdock beginning of October, with *Lappella*. I fancy the books are wrong in saying that this larva feeds in the stems and roots of burdock. I can only find them in the seed-heads; perhaps they gnaw into the roots or stems for the purpose of pupating. *A. aneana*, a fine series bred from ragwort roots dug up in April near Gravesend. I have since found this larva much nearer to London.

Conchylis francillana. Until last week (October 31st) I had looked in several places in vain for this larva, but in casually splitting open a stem of *D. carota* I found three full-fed larvæ. It seems to be much more local than *dilucidana*. *C. dilucidana*, bred rather freely from dead stems of wild parsnip. *C. smeathmanniana*, larvæ in October, common in seed-heads of Milfoil, which I think must be this species. I failed to breed anything from a lot of larvæ obtained last year.

Aphelia osseana, not uncommon on Boxhill in July. I did not meet with any rarities amongst the Crambidae or Phycidae. The following were the best species:—

Platytes cerussellus, swarming on one part of Boxhill, and also in the "Salterns" below Gravesend; two very different localities!

Crambus falsellus, bred from moss growing upon an old wall at Whittlesford. *C. pascuellus*, rather local, but common wherever found. *C. perlatus* (var. *dealbatus*), Brentwood beginning of July. *C. inquinatellus* and *geniculellus*, both common in the forest.

Ilithya semirubella, Boxhill in July, not so common as usual.

Myelophila cribrum, larvæ in heads of thistles in September.

Homæosoma sinuella. I was much surprised at meeting with this species flying amongst grass, &c., on a railway bank, many miles from the sea. I always thought it was confined to the south coast.

Phycis fusca, very sparingly amongst ling and birch. Seems local and uncommon in this district. I did not meet with *betulæ* at all this season. *P. adornatella*, swarming as usual on one part of Boxhill at the end of June.

Rhodophæa consociella, larvæ very common on oaks in the forest, &c. *R. advenella*, from six larvæ found in June I bred six fine imagos. Loughton, &c. From some hawthorn berries gathered at the end of September, besides the larvæ of *S. ianthiana* already recorded, *Laverna atra* larvæ came out in their usual abundance, and also three very small larvæ of what must be *R. advenella*; their markings and colour are just the same as the more mature ones I got in the early summer, but rather paler. It would be interesting to know that this larva in its early stages feeds in the fruit of the hawthorn. *R. suavella*, bred eighteen fine specimens from larvæ found feeding on hawthorn in the forest in June last. I did not meet with either *tumidella* or *marmorea* this year.

IS HEINEMANN'S *DICRORAMPHA* SEPARABLE FROM *D. CONSORTANA*?

By RICHARD SOUTH, F.E.S.

MR. W. MACHIN, in recording (Entom. 232) the capture of a *Dicrorampha*, states that they had been identified by Mr. C. G. Barrett as true *distinctana*, Hein.

In his correction of a supposed error in the determination of my *Dicrorampha* sent him in 1882 (E. M. M. xxiii. 162), I note that Mr. Barrett does not make any reference to the above. I have not seen Mr. Machin's insect, but I understand that it is not at all like my specimen, and could not possibly be confounded therewith. If this is a fact, then Mr. Machin's insect cannot agree with Mr. Barrett's description of *distinctana* (E. M. M. xviii). My insect, on the other hand, is so accurately portrayed, that one might very well believe that it was the actual specimen from which the description referred to was taken. Now that Mr. Barrett has had this specimen a second time under examination, and finds that it wants certain marks which he has discovered in his types of Heinemann's insect (which he says should serve, if constant, to distinguish *distinctana* from my insect, i. e., *consortana*), the logical conclusion would appear to be that the English and not the German insect was the one

described. However, this phase of the matter is perhaps not of particular moment.

Mr. Barrett considers that Heinemann's insect is specifically distinct from *consortana*, and this decision would seem to have been arrived at after carefully comparing his German types of *distinctana* with a bred series of *consortana*, which I had the honour of submitting to his notice. Although that series of *consortana* consisted of individuals which in some trivial respects differed one from another, there were among them specimens which possessed the particular character of marking claimed for *distinctana* only.

I must confess myself unable to decide on the merits of a more or less *squared* wing apex, especially when such comparison is made between caught and bred specimens, but I am inclined to think that in this particular case such distinctions are unimportant.

As regards the pale dorsal mark of *distinctana* being "broader at the apex, and more strongly divided, each division being again divided by a black line," I can only say that in all the bred *consortana* I sent to Mr. Barrett the dorsal blotch is exactly so divided and subdivided, but such division is more distinct in some individuals than in others, and it may be that in none of them are the divisions so pronounced as in Mr. Barrett's German types. Again, in the majority of the specimens the dorsal blotch extends in a slightly oblique direction more than halfway across the wing, but in one or two examples this mark is distinctly broken at the middle of the wing, and its continuation forms a round or nearly round spot just beyond the middle and towards the hind margin of the wing. In these last the apex of the dorsal blotch may be said to be broad.

The costal streaks in the bred *consortana* are usually seven in number, and are arranged in the following order:—a pair before the middle, another pair on the middle, and three singly at regular intervals between the last pair and the apex. In some specimens there are an additional pair towards the base, in others the pair before the middle are absent, and in one example the single streaks only are clearly defined. The ocellus is enclosed between the metallic (silvery blue) lines which curve across the wing from the third and fifth costal streaks, counting from the apex. I may observe that the streaks referred to as occurring in pairs are

not always quite close together, but are relatively nearer each other than to their fellows on either side.

The captured *consortana*, compared with bred examples, are noticeable on account of their lighter colour and more distinct ocelli; this is, I think, due to the absence of the dark powdery scales found so abundantly on the bred specimens.

As far as I can form an opinion from the foregoing facts, I find myself unable to accept Mr. Barrett's decision that Heinemann's insect is specifically distinct from *Dicrorampha consortana*. Whilst entertaining every respect for Mr. Barrett's judgment in these matters, I venture to suggest that he was less in error in his original determination of my insect than he now is in his correction.

12, Abbey Gardens, London N.W., Nov. 11, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN PEMBROKESHIRE.—I suppose that every new locality for this butterfly must be interesting to entomologists; I therefore trouble you with an account of its capture in quite a new place. A young friend of mine, Mr. T. Mousley, jun., was shooting on Lord Cawdor's estate in this parish, towards the end of last September, when he observed a large butterfly of unusual appearance flying across a stubble-field. He is not an entomologist, but perceiving that the insect was something uncommon at once gave chase, and with the assistance of a keeper and another man succeeded in capturing it. He had not heard of the various appearances during past years of *A. plexippus* in this country; but being certain that there was something uncommon about this insect he mentioned it to me. From his description I felt sure that it must be our new species, and asked him to show it to me. He brought it over one day last month, and I was much pleased to find that it was a very fine specimen of *A. plexippus*. It had been in the finest condition, but the tip of one of the fore wings was a little damaged in capturing it. Knowing me to be a collector he very kindly presented his prize to me, and now it adorns my cabinet. I may add that two sides of this parish are washed by the Atlantic, and the place of

capture is about two miles from the coast. It thus resembles very much the Cornish localities for this insect.—CLENELL WILKINSON; Castlemartin Vicarage, Pembroke, Nov. 16, 1886.

EPINEPHELE IANIRA *var.* HISPULLA AT HAYLING ISLAND.—Mr. W. Butler, of this town, has shown me a variety of a female *Epinephele ianira*, taken by him last July at Hayling Island. The primaries are suffused with fulvous colouring to such an extent that, had the specimen come from a more southern latitude, I should have felt no hesitation in naming it *var. hispulla*, Hüb. I think this varietal name might be added to the British list.—H. C. LANG; Western Elms Cottage, Reading, Berks, November 22, 1886.

COLIAS EDUSA.—The following records have been received of the occurrence during the past season of *Colias edusa*.—J. T. C.

I took a male specimen of *Colias edusa* here on August 31st last. It was so much worn as to suggest the idea of its having hibernated for two or three seasons. I never remember a year so devoid of butterflies, even of the commonest species. I did not see a single *Vanessa cardui*.—JOSEPH ANDERSON, jun.; Chichester.

As this insect appears to have been scarce during the past season, it may be of interest to record the capture of a fine specimen at Mumbles, near Swansea, on August 24th.—C. J. WAINWRIGHT; 147, Wall Road, Wandsworth Common, Nov. 9.

THE VANESSIDÆ IN THE MIDLANDS.—It seems strange that in the Forest of Wyre, in Worcester, where the Vanessidæ are usually to be met with in great abundance, there is an almost entire absence of nettles. On the other hand, it is still more astonishing that in the Valley of the Tame, where nettles are exceedingly luxuriant and plentiful, the Vanessidæ are comparatively scarce.—W. HARCOURT BATH; Birmingham, Oct. 9.

UNUSUAL ABUNDANCE OF THE LARVA OF PIERIS BRASSICÆ.—Have any readers of the 'Entomologist' observed the larvæ of *Pieris brassicæ* in greater numbers than usual this year? For my part, I hardly ever remember having seen them in such extraordinary abundance, unless it was in the autumn of 1884, when they appeared in great plenty, but in nothing like the numbers of this season. I was staying at Groombridge during August and also the greater part of last month, and first observed some larvæ in a garden on September 11th. In this garden there

was a very small piece of ground planted with broccoli, and on these plants the larvæ were swarming in all stages of growth. The damage done was most apparent, as nearly every broccoli appeared reduced to a mere skeleton. I am sure that I could have obtained thousands and thousands of larvæ had I been so inclined. After this I made enquiries, and also visited several gardens in different places, with the result that everywhere the larvæ were equally abundant. In the districts round this village (Lindfield) I have ascertained that the larvæ have done serious mischief this autumn, having appeared in immense numbers nearly everywhere. The larvæ have been pupating during the last few weeks, and are still doing so; and I have noticed that a very large percentage are attacked by *Microgaster glomeratus*, whose small yellow cocoons are appearing on walls, &c., up which the larvæ are crawling. The question now arises—Wherefore this extreme plentifulness of these larvæ this year? I had always been inclined to believe that a dry summer was best suited to their growth and development, but it can hardly be said that the summer we have just experienced has been anything like a dry one on the whole. I am rather of opinion that the scarcity or abundance of the larvæ depends a good deal on the weather being unfavourable or favourable to the development of the parasite, and also on the weather experienced in some seasons being more suitable than in others, for the successful growth of the larva of the butterfly itself. However, be the cause whatever it may, there is still a great deal to be found out concerning these mysterious and sudden appearances of the larvæ in such quantities in certain seasons, when in others they are comparatively scarce; and it would therefore be interesting to hear the opinion of others on the subject. I may add that *P. brassicæ* has, as far as my experience goes, been very scarce indeed in the imago this summer. I have seen but very few on the wing, not more perhaps than fifteen or sixteen specimens the whole summer.—W. H. BLABER; Beckworth, Lindfield, Sussex, Oct. 18, 1886.

SPHINGIDÆ IN SUSSEX.—In the October issue of this magazine I see only one recorded capture of *Sphinx convolvuli*, and as entomologists seem to think that a good year for this insect must be followed by a bad one, perhaps your readers will be interested by the following notes. In the spring I had my garden planted with such flowers as are supposed to be attractive

to this *Sphinx*, and during most suitable nights in September I watched likely patches of bloom. The first I noticed on Sept. 12th, and I took a specimen at dusk the next day. During the moonlight nights in the middle of September *convolvuli* invariably appeared just before the moon rose, in addition to their twilight feed. The latest I noticed at 11 p.m. Though attracted by light they would not feed by it, and I had better success in seeing, or rather hearing, them without a light. I could always tell when one was about by the loud whirr of its wings, and noticed that they invariably explored to leeward of a flower, but before feeding. I did not obtain more than three specimens, so interesting was their mode of feeding, &c., but a friend who resides about a quarter of a mile from me took one and knocked over another. He also described what I think must have been *Chærocampa celerio*, which he struck at, and as I captured a specimen, the only one I saw, on the 29th of September, with distinct marks of a blow on its thorax, my idea is borne out. During most nights in September I saw *convolvuli*; neither cold nor wind seemed to affect them. Indeed, one was literally blown into a bed of phlox during the hot wind of October 1st. The first male that I noticed was on the 29th, all the earlier specimens appearing to be females. At the slightest movement *S. convolvuli* disappears, and if struck at is gone for the night. Other people in the neighbourhood have noticed them this year, and one non-entomological friend, who resides two miles from me, told me that two moths as "big as blackbirds," tried to get through the window at him. I should be much obliged if any of your correspondents would give me any hints about finding the caterpillars, as, though I offered hedgers, harvesters, &c., a shilling each for all "grubs" found over a certain size, I did not succeed in getting a larva of *S. convolvuli*. Since writing the above on the 4th inst., *S. convolvuli* has turned up in great abundance, and I have taken eight more specimens; and one other good example of *C. celerio*.—DOVER C. EDGELL; Firle, Lewes, October 8, 1886.

SPHINX CONVULVULI.—On the 28th of September I found a perfect specimen of *Sphinx convolvuli* at rest on a fence in the neighbourhood of Blackheath.—G. SHUTE, jun.; 14, Crooms Hill, Greenwich, S.E.

ON BREEDING VARIETIES OF *ANGERONA PRUNARIA*. — Continuing my observations on this subject (Entom. xviii. 254), I regret that of the fifty larvæ referred to I only succeeded in bringing to maturity a single example of *A. prunaria*, whose progenitors were the speckled variety of the female and the orange-banded variety of the male already described. This example proved to be a palish and somewhat degenerated female of the ordinary variety of that sex, of the fourth and inbred from the third generation. This degeneration evidently arose from two causes, viz., interbreeding, and an enfeebled condition of the female—the latter cause resulting from some hesitation on my part whether to kill the insect for the cabinet or run the risk of spoiling the specimen in experimenting with it. Thus I conclude that had the female been unimpaired, the results of interbreeding would at this stage have been scarcely, if at all, apparent, and the fifth generation attained without any very sensible diminution in the size and vigour of the race. On the other hand, in the absence of an infusion of new blood, the effects of interbreeding with this insect would be no doubt apparent in the third and decided in the fourth generation, even were the interbreeding to take place under the most favourable conditions. Though the continuity of my experiments have been interfered with, I am happy to say that through the kindness of a friend, to whom I had given a brood of the larvæ of this moth in March, 1885, I have been enabled this year to resume experiments; but another season, or perhaps two, must necessarily elapse, before I can look for notable aberrations or new varieties—ordinary varieties only having resulted from the resumption of experiments. Of these varieties I effected pairings as follows:—ordinary female with speckled variety of male; ordinary female with orange-banded variety of male. I should mention that, owing to a considerable interval, about three weeks, elapsing between the emergence of the moths from which the above-mentioned pairings were effected, and the single experiment—remnant of the first series of experiments—I was not able to affect a pairing with the latter. I am, however, still in hopes, at no very distant date, of being enabled to record the variation looked for.—GEO. J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W.

TEPHROSIA CREPUSCULARIA EMERGING IN OCTOBER.—In the month of July last I took a female of the above species in the

New Forest. From this insect I obtained a batch of ova, which hatched in about fourteen day's time; the larvæ duly pupated, having been fed on plum. On the 12th of October I was astonished to find that a perfect insect had emerged from one of these pupæ. Up to this time no more imagos have appeared, so it would seem that the rest of the brood intend to remain in the pupa-state for the usual length of time. The pupæ have not been "forced" in any way.—E. W. H. BLAGG; Cheadle, Staffordshire, November 8, 1886.

PEDISCA (MIXODIA) RATZEBURGHIANA IN SURREY.—Working among spruce in a wood at Addington, on the 23rd of last July, I captured three specimens of a Tortrix, which I did not at the time recognise. A few days ago, on going through the Doubleday Collection, I found they were *Pædisca ratzeburghiana*. This northern species is not included by the late W. P. Weston in his list of Tortrices of Surrey, Kent, and Sussex; and does not appear to have been hitherto recorded from this county.—W. G. SHELDON; Rose Cottage, Oval Road, Addiscombe, Surrey, October 22, 1886.

OCHSENHEIMERIA VACCULELLA.—This insect has hitherto been considered a rarity, having managed to keep itself hid away from the prying eyes of the entomologist; but it seems now to have turned up in almost incredible numbers, not in any one particular place, but apparently all over the country. I have for many years past found a few specimens of *Larerna stephensiella* on one or two large oaks in our forest; and on searching last year for this insect I met with *O. vacculella* for the first time. Thinking its larva possibly might have fed under the bark, I went down in the early part of last July and collected a large bagful of the bark, with its usual abundance of webs and rubbish. I examined it carefully day by day, but no moths emerged from it. In the middle of July I again visited the trees, and was surprised to find *vacculella* in plenty, twenty-seven being captured in about an hour, with ten *L. stephensiella* and two *Sesia asiliformis* (*cynipiforme*) (one drying its wings), when I was compelled to leave to meet my train. I believe I could have taken any quantity of *vacculella* had I not been limited to time. The life-history of this insect at present remains a mystery; probably its larva, when discovered, will prove, like others of the genus, to be a

grass-feeder.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., November 5, 1886.

PSYCHE OPACELLA AT RANNOCH.—I got in Rannoch, this season, a specimen of *Psyche opacella*, in good condition. Is it not rather a rarity, and generally found in the New Forest? I never met with it before in Rannoch. I also took *Stilbia anomala* there—for the first time since 1868 or '69. —ELIZABETH CROSS; The Vicarage, Appleby, Doncaster, October 19, 1886.

PTOCHEUUSA (GELECHIA) SUBOCELLEA FEEDING ON THYME.—I have received from Mr. J. H. Wood, of Tarrington, *Ptocheuusa* (*Gelechia*) *subocellea* cases infested by a Chalcid, with a remark, "The cases were abundant on wild thyme, but the great majority stung." The larvæ attacked are only about half-grown, consequently the larva-cases are small, but, notwithstanding, they are very conspicuous on the withered flowering stems. The end of the case, from which the larva protruded its head, is affixed to the calyx of the seed-pod from which it made its last meal. I do not remember seeing it mentioned before that *P. subocellea* fed on the seeds of the thyme as well as marjorum.—G. C. BIGNELL; Stonehouse, Plymouth, October 9, 1886.

WHAT CONSTITUTES A SPECIES?—I should like to be allowed to say a few words with regard to Mr. South's statement as to what constitutes a species. I don't think entomologists are so much at a deadlock as he seems to think, with regard to their ideas of what constitutes a species (Entom. 270); and the important factor to me seems to be, will the individual copulate freely in a state of nature, to propagate their own particular kind? If so, however variable the forms may be, I think it is generally recognised that the progeny form but one species; and I believe I am quite safe in saying that this is the chief point in the minds of most entomologists. If this be so, I must ask Mr. South one question. Has he or any careful observer ever seen an undoubted specimen of the early brood which we call *crepuscularia* in copulation with an undoubted specimen of the late brood which we call *biundularia*? Only this year we had a notice chronicled in the 'Entomologist' of their occurrence at the same time. I have noticed the same thing myself, but I never saw copulation take place, and as we get some strange cases of unnatural copulation noticed at times, it seems strange

that two similar insects occurring in the same woods, often at the same time, should never copulate. The individuals surely recognize a difference that many entomologists fail to see, that nature has separated them widely and distinctly, and that they have nothing in common, although they bear a superficial resemblance to each other. Of course we are all aware that insects do copulate at times in a very erratic manner; we hear of *Diurni* copulating with *Pyrales*, and *Bombyces* with *Noctuæ*, but such cases are so exceptional that they may be set aside. The copulation of allied species is more common, but really, considering the number of insects, and the close alliance undoubtedly existing between many of them, the number is still very small, and nature rarely seems to deviate from her general paths. I have never myself seen a case of copulation between different recognized species, except with *Agrotis nigricans* and *A. tritici*, and then only in about ten instances out of some hundreds of insects thus noticed, and I would not like to stake much on the identity of all these *Agrotis nigricans*. There seems to be little doubt that the Scotch *Tephrosia* from Perth is identical with our southern *crepuscularia*. A series I have received from Messrs. Lawson and Macgregor are exceedingly fine, and the latter gentleman has kindly sent me a pair taken in copulation on April 8th, the male a finely-marked typical specimen, the female a pale, well-marked specimen, coinciding exactly in size and colour with the July brood. It seems to me remarkable and worthy of notice that so far north, where *crepuscularia* is only single-brooded, a small percentage of the progeny apparently assume the size and superficial resemblance of our southern July brood. I think Mr. South must go further than he does to find the differences we cannot agree upon.—J. TUTT; Blackheath.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 3rd, 1886.*
 —Robert McLachlan, Esq., F.R.S., President, in the chair. The following gentlemen were elected Fellows, *viz.*, Mr. Peter Cameron, of Sale, Cheshire; Mr. F. Archer, of Crosby, Liverpool; Mr. H. J. S. Pryer, of Yokohama, Japan; Mr. H. Norris, of St. Ives, Hunts; Mr. N. P. Fenwick, of Surbiton Hill; Mr. John Brown, of Cambridge; Mr. J. Tutt, of Blackheath;

and Mr. A. P. Green, of Colombo, Ceylon. Mr. E. B. Poulton exhibited a mass of minute crystals of formate of lead, caused by the action of the secretion of the larva of *Dicranura vinula* upon suboxide of lead. He stated that a single drop of the secretion had produced the crystals which were exhibited; and he called attention to the excessively high percentage of formic acid which must be present in the secretion, and to the pain, and probable danger, which would result from being struck in the eye by the fluid which the larva had the power of ejecting to a considerable distance. A discussion ensued, in which Messrs. White, Kirby, Slater and others took part. Mr. S. Stevens exhibited a specimen of *Laphygma exigua*, recently captured by Mr. Rogers in the Isle of Wight. Mr. W. F. Kirby exhibited, and read notes on, a specimen of *Perilampus maurus*, Walk., recently bred by Mr. Walter de Rothschild from *Antheraea tirrhea*, Cram., one of the rarer South African *Saturniæ*. Mr. T. W. Hall exhibited a number of specimens of *Xanthia fulvago* (*cerago*), somewhat remarkable in their variation, and showing a graduated series, extending from the pale variety *flavescens* of Esper, to an almost melanic form. Mr. W. C. Boyd exhibited, and made remarks on, the larva of a species of *Ornithoptera* from New Guinea. Mr. H. Goss exhibited a series of *Bankia argentula* collected in Cambridgeshire, in June last; and also, for comparison, a series of specimens of the same species taken at Killarney in June, 1877. It appeared that the Irish form of the species was larger and more brightly coloured than the English form. Mr. Eland Shaw exhibited a female specimen of *Decticus verrucivorus* (Linn.), taken in July last, at St. Margaret's Bay, Kent. Mr. Waterhouse recorded the recent capture of *Deiopeia pulchella* at Ramsgate, by Mr. Buckmaster; and the capture of *Anosia plexippus* at Gibraltar was also announced. Mr. J. W. Slater read a paper on "The Relations of Insects to Flowers," in which he stated that many flowers which gave off agreeable odours appeared not so attractive to insects as some other less fragrant species; and he stated that Petunias, according to his observations, were comparatively neglected by bees, butterflies and Diptera. Mr. Distant, Mr. Stainton, Mr. Weir, Mr. Stevens and the President took part in the discussion which ensued, and stated that in their experience Petunias were often most attractive to insects. Mr. Stainton referred to the

capture by himself, of sixteen specimens of *Sphinx convolvuli* at the flowers of Petunias, in one evening in 1846. Jonkeer May, the Dutch Consul-General, asked whether the reported occurrence of the Hessian Fly (*Cecidomyia destructor*) in England had been confirmed. In reply Mr. McLachlan stated he believed that several examples of an insect thought to be the Hessian Fly had been bred in this country, but that everything depended upon correct specific determination in such an obscure and difficult genus as *Cecidomyia*.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 4, 1886. The President in the chair.—Mr. E. Sabine was elected a member. Mr. Billups exhibited seven male specimens of *Halictus xanthopus* from Reigate, and contributed notes. Mr. A. E. Cook, *Vanessa C-album*, from Wales. Mr. Jager, a variety of *Hypsipetes ruberata*, from Brockenhurst, Mr. Sheldon, dark forms of *H. sordidata*, from Cadder Moss, Lanarkshire. Mr. T. W. Hall, *Cerastis vaccinii* and *C. spudicea*, and contributed notes. Mr. J. T. Carrington, six of the spurious varieties of *Vanessa urticae* referred to at the last meeting of the Society as having been offered for sale. Mr. R. South, *Cynophos obscuraria*, from Folkestone, the New Forest, Perthshire, North Devon, and Lewes, and read a short paper thereon. Mr. Rose, *Lycæna virgaureæ*, captured by himself in Norway; varieties of *Boarmia repandata* from the Isle of Wight and the Lake District, also *Nudaria mundana*, L., and contributed notes. Mr. Adkin, *Euchelia jacobææ*, in one specimen the red markings being absent from the right wing. Mr. Chaney, the following Coleoptera: *Sphodrus leucophthalmus*, from Peckham; *Molytes germanus*, *Agabus nitidus*, from Sandown, and *Barynotus mœrens*, from West Horsley. Mr. Billups, Orthoptera: *Gomphocerus rufus*, Ch., from Reigate. Hemiptera: *Corimelena scarabæoides* and *Sehirus moris*, both from Reigate.

November 18th, 1886. The President in the chair.—Messrs. W. F. Blandford and Mullins were elected members. Mr. T. R. Billups exhibited a female specimen of *Prosopis punctulatissima*, taken at South Hayling, June, 1886, and stated that this very rare short-tongued bee had hitherto been recorded from Birch Wood, Kent, where it was taken some twenty-five years since by the late Mr. F. Smith; also two drawers of Ichneumonidæ,

showing his improved system of mounting these very fragile insects, and the method of labelling obviating the keeping of a journal. Mr. Billups's setting caused general admiration. Among many other exhibits, Mr. R. South showed three instances in the colouration of the female of *Lycæna icarus* and *L. bellargus*, a variety of the latter species coming close to the var. *ceronus*, but wanting the orange spots on the fore wings; had these been present Mr. South said it would have exactly corresponded with the var. of *icarus* shown by its side. There was also a curious form of the male of *Lycæna corydon*, with distinct ocelli on the fore wings, and a specimen of *L. icarus* from the Isle of Hoy, having a strong tinge of the *bellargus* blue on the inferior wings.

November 25th. *Annual Exhibition.*—The Exhibition was held at the Bridge House Hotel, London Bridge; the exhibits, which were contributed by over ninety members and friends, being representative of most of the divisions of the animal and vegetable kingdoms. Among those exhibiting in the class Insecta were Mr. McLachlan, with Exotic Neuroptera (dragon-flies, ant-lions, &c.), and jumping seeds from Mexico containing larvæ of *Carpocapsa saltitans*. Mr. J. J. Weir, his collection of *Argynnis paphia* and other Argynnidæ; exotic silk-worm moths, &c., and numerous species of Cicadidæ. The Zoological Society, various species of *Attacus*, including *atlas*; South African Bombyces, and various species of *Papilio*, among which were *P. podalirius*, *P. demoleus*, *P. ajax*, &c.; the whole of the insects shown having having been reared in the gardens of the Society. Mr. R. Adkin, British Rhopalocera, Sphinges and Bombyces; also Pterophori and Tortrices taken or bred during the year, varieties of *Sarothripus undulatus*, &c., and *Diasemia literata*. Mr. W. Farren, of Cambridge, *Bryophila impar*, varieties of *Acidalia rubiginata* (*rubricata*), &c., and a water-colour drawing of *Papilio machaon*, showing the complete life-history. Mr. L. Gibb, *Zygæna exulans* var. *subochracea*, from Braemar. Mr. Harwood, of Colchester, a variety of *Arctia villica* having the right fore wing black and the other three wings normal. Mr. Murray, of Carnforth, six specimens of *Cidaria reticulata*, from larvæ found upon *Impatiens noli-me-tangere*. Mr. R. South, his almost complete collection of British Crambi, Pterophoridæ, and Pyralidæ. Dr. P. Rendall, British specimens of *Vanessa*

antiopa, *Noctua conflua*, *Laphygma exigua*, &c. Mr. W. Warren, *Bryophila impar* and yellow forms of *B. perla*. Mr. J. Jager, *Callimorpha hera* and var. *lutescens*, from South Devon. Mr. G. P. Shearwood, three drawers of preserved larvæ and imagines. Mr. J. R. Wellman, a portion of his collection of British Nocturni, Geometræ and Noctuæ; also a box containing three broods of *Acidalia emarginata*. Mr. J. T. Williams, three drawers containing some interesting varieties, including *Abraxas grossulariata*, &c., *Drepana harpagula* (*sicula*) from Bristol, *Amphidasys betularia* var. *doubledayaria*, &c. Mr. Adye, of Christchurch, an interesting variety of *Epinephele ianira*, *Chærocampa celerio*, taken at Christchurch, 1885, and numerous other species and varieties. Mr. E. Anderson, life-histories of British Lepidoptera, including *Trochilium crabroniformis* and other wood-boring larvæ. Mr. J. A. Cooper, *Phorodesma smaragdaria* and living larvæ of the same species; also *Erastria venustula*. Mr. Jobson also exhibited *P. smaragdaria* and other species. Mr. G. Elisha, seven drawers of his collection of the British Tineina, the one of *Coleophora* being very fine; also a drawer of preserved larvæ and pupæ. Mr. Goldthwaite, *Sphinx convolvuli*, &c. Mr. F. Barclay, *Chærocampa celerio*, *Pachetra leucophæa*, &c. Mr. J. Knight, a selection from the Nocturni, Cuspidatæ and Noctuæ; among the species shown were hybrids between *Smerinthus populi* and *S. ocellatus*, a specimen of *Sesia andreniformis*. Also British and foreign pupæ. Mr. W. H. Tugwell, drawers of British Lepidoptera, containing the Nocturni, *Macroglossa* to *Setina*, including the only known British specimen of *Syntomis phegea* and numerous forms and varieties. Mr. J. W. Tutt, comparative series of Agrotidæ and *Tephrosia crepuscularia* and *T. biundularia*, and a series of the last named from Mr. Harrison, of Barnsley. Mr. C. H. Williams, some interesting life-histories, *Eriogaster lanestris*, on the silken web spun by the larvæ, *Dasychira fascelina*, *Agrotis præcox*, &c. Mrs. Hutchison, examples of three broods of *Vanessa C-album*, and a *Eupithecia* apparently new to Britain. Mr. J. Smith, a white variety of *Lasiocampa quercifolia*, and a pretty variety of *Bapta temerata*, &c. Mr. A. Bliss, Exotic Lepidoptera, &c., from the district of the Formosa River and from Darjeeling. Mr. J. S. Sequeira, Lepidoptera from Central America. Mr. S. Edwards, exotic Lepidoptera and Coleoptera. Messrs. Carpenter, Hall,

Levett, Ellison, Joy, Watson, Helps, Fremlin, Oldham, Hickling, McDonald, and others, also exhibited Lepidoptera. Mr. Billups, British and Exotic Coleoptera, British Hemiptera, Hymenoptera Aculeata, Ichneumonidæ and Diptera; the new method of setting and labelling the Hymenoptera attracting considerable attention. Mr. F. Grut, Exotic Coleoptera. Mr. E. Shaw, some recently captured British Orthoptera, many of them from south-eastern localities. Mr. West (Greenwich), twelve drawers of British Coleoptera, the whole forming a very fine collection. There were a large number of microscopes showing the smaller forms of life.—H. W. BARKER, *Hon Sec.*

REVIEWS.

Fourth Report of the United States Entomological Commission.
By CHARLES V. RILEY, Ph.D. Washington. 1885.

THIS fourth report, issued by the U. S. Department of Agriculture, contains the final report on the cotton-worm, together with a chapter on the boll-worm. These are the chief enemies of the cotton plant, but Dr. Riley tells us that "a good deal of material has been collected bearing on these other insects affecting the plant, and we hope some day to find time to prepare it for publication."

To take the lesser enemy first, Chapter XVI. treats of the boll-worm as a cotton enemy. This is the cosmopolitan and almost polyphagous, though rare to Britain, *Heliothis armigera*, which everywhere appears to be destructive where abundant. Its larva is a grass, leaf, stem, or fruit feeder, being especially partial to the ears of maize, the fruit of the tomato, and the boll of the cotton plant; its attacks on the garden geranium only appear to have become known in the States last year through a Denver correspondent ('Report,' p. 363): we were nine years before them in this direction (see Entom. ix. 261, x. 283). In the southern portions of the cotton belt this species appears to have five broods in the year, a prolific and troublesome enemy to deal with.

The cotton-worm report is extremely exhaustive, and we are told in the introduction that it was virtually finished at the end of 1882, before the preparation of the third report, but its appearance was delayed from various causes. It carries the

history of *Aletia xyliana*, Say. (? *argillacea*, Hübn.), much further in many directions, especially in its practical application. That the insect is worthy of a special report on account of its destructiveness is abundantly evidenced by the statistics given in Chapter I., where we read that "the average annual loss may safely be put down at about 15,000,000 dols. for all the cotton States for the fourteen years following the war"; in a year of bad attack this loss has been doubled.

The natural history, chronology, geographical distribution, parasites, and anatomy of this destructive Noctua are fully treated of in the first five chapters; then follows an instructive account of the general features of the cotton belt by Professor Eugene A. Smith. Chapter VII. treats of the terrestrial and meteorological influences affecting the worm, and contains much useful local information. Many instances of erroneous opinions as to hybernation being firmly held by intelligent planters are given (pp. 16—22), and from experience in this country can well be believed.

Chapter VIII. gives a full and well-illustrated account of the natural enemies, which are particularly numerous considering that not a single true parasite of *Aletia* had been recorded by name when the special investigation began; now we know of one parasite being bred from the egg, six from the larva, and five from the pupa. The account of a Cynipid (*Hexaplasta zigzag*, Riley) being a parasite of the dipterous *Phora aletiae* is interesting and unusual.

The next two hundred pages are devoted to different preventive measures, remedies and methods of destruction, some of which are very ingenious and doubtless well capable of further extension, but any wide application of others would appear futile or impossible; still it is well that all should be mentioned, for, as we are told by Dr. Riley in his preface, "he has also endeavoured to bear constantly in mind that the chief object which Congress had in ordering the investigation was a practical one, and that whatever purely entomological knowledge was acquired, however interesting to the naturalist, was of less moment, unless it had some bearing on this practical phase of the subject." So it should be, and so doubtless the large amounts voted by Congress will be considered to have been well spent: as far as we can see the work has certainly been thoroughly done and it has been

well done. The vast amount of information contained in this bulky and well-turned-out volume (comprising 585 demy 8vo pages, illustrated with two coloured maps and sixty-four plates, thirteen of which are coloured) cannot fail to be of great practical value to those interested in cotton culture.—E. A. F.

West Sussex Lepidoptera.

THE recently-issued Part (N. S., No. 5) of the 'Transactions of the Chichester and West Sussex Natural History and Microscopical Society' contains a "List of Lepidoptera observed in West Sussex," from the capable pen of Mr. W. H. B. Fletcher, of Worthing. The list includes 35 Rhopalocera, 9 Sphinges, 35 Bombyces, 70 Noctuæ, 98 Geometræ, 28 Pyralides, 12 Pterophori, 19 Crambi, 117 Tortrices, and 239 Tineæ. It is not a mere list of names, for in addition to localities it contains many interesting notes on various species, *e.g.*, the decreasing numbers of *Polyommatus phlæas* is attributed to the habit of farmers pulling the docks when the larvæ are feeding; would that the habit were general! The larvæ of *Lycæna argiolus* "may be taken from umbels of *Cornus sanguinea* by beating or searching for them." Under *Cossus ligniperda* we have, "Saw 105 larvæ taken out of one elm tree at Bersted Lodge, Bognor, one day in January, 1883. Many were taken, by the dozen or score at a time, up to January, 1885, when tree was felled as the best way of destroying the remaining larvæ." The larvæ of *Abraxa grossulariata* are recorded as occurring "in numbers in 1885, on the evergreen *Euonymus japonica*, a rather strange food-plant." *Lobophora polycommata* larvæ "may be found plentifully by hunting for leaves of *Ligustrum vulgare* with ovate pieces eaten from their edges." *Coremia unidentaria*, "the red-banded form (Newman's 'British Moths,' p. 176), is commoner than the black-banded one near Worthing. I referred the former to *C. ferrugata* until in 1886 I bred both forms from eggs laid in 1885 by a specimen of the latter." *Anacamptis anthyllidella*, "The second brood of larvæ feed with the larvæ of *Lycæna minima* (*alsus*) in the pods of *Anthyllis vulneraria*." And so on. Two specimens of *Chærocampa celerio* are recorded from Chichester by Mr. Joseph Anderson, jun., at p. 48. This species is not included in Mr. Fletcher's list.—E. A. F.

THE
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EDITED BY JOHN T. CARRINGTON, F.L.S.

WITH THE ASSISTANCE OF

T. R. BILLUPS, F.E.S.

FREDERICK BOND, F.Z.S., F.E.S.

EDWARD A. FITCH, F.L.S., F.E.S.

RICHARD SOUTH, F.E.S.

J. J. WEIR, F.L.S., F.Z.S., F.E.S.

F. B. WHITE, M.D., F.L.S., F.E.S.

“ By mutual confidence and mutual aid

Great deeds are done and great discoveries made.”

POPE'S ‘*Homer*.’

VOLUME THE TWENTIETH.

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—
1887.

“All things in common Nature should produce,
Without sweat or endeavour; * * *
* * * * Nature should bring forth,
Of its own kind, all foison, all abundance.”

‘*Tempest*,’ Act 2, Scene i.

“Such, said Adoam, are the sentiments of this sagacious people, who have acquired wisdom only by the study of Nature.”—‘*Telemachus*,’ Book viii.

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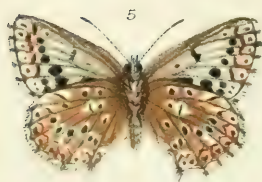
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EDITORIAL ANNOUNCEMENT.

The Editor has great pleasure in announcing that Mr. T. R. BILLUPS, F.E.S., has consented to add his name to those who so kindly assist him in conducting the 'Entomologist.' Mr. BILLUPS is so well known as a worker in the less-known orders of insects that our readers will welcome this addition to the editorial staff.



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NOTES ON THE GENUS *LYCÆNA*.

By RICHARD SOUTH, F.E.S.

(PLATE I.)

THE well-known tendency to variation exhibited by certain species of *Lycæna* has marked them out as the particular quest of the "variety hunter." I have myself given many hours to the examination of such species as *L. icarus* and *L. corydon* in their natural haunts. My object, however, was not so much the acquisition of extraordinary forms as a desire to obtain a knowledge, as far as this was practicable, of the whole range in the variation of these species in particular South of England localities. I need hardly say that, with such purpose in view, capture with the net would have either entailed a considerable expenditure of time or necessitated wholesale slaughter of "the innocents." As I could not afford the one and was unwilling to effect the other, a line of operation was adopted, which though sometimes difficult to conduct,* was nevertheless attended with very satisfactory results.

Having first ascertained the best places for work, *i. e.*, places where the species were most numerous, these were visited on dull days, or after 5 p.m., when the insects were either asleep or preparing for sleep. Working against the wind, all examples of *icarus* or *corydon* that could be got hold of were examined, and the required aberrations "pill-boxed," the rejected ones being cast to

* As, for instance, when the butterflies rested on the herbage growing on steep slopes, such as those below Beachy Head at Eastbourne.

the rear, so that the chance of an individual coming a second time under observation, at least on the same day, was reduced to a minimum. As the under surface of the hind wings only was visible while the insects were at rest, it was found necessary to take each specimen between the finger and thumb of the right hand, seizing the closed wings gently, but firmly, near their base, and then quickly secure its body with thumb and index finger of the left hand, when the upper as well as the under side could be readily examined. Treated in this way neither the specimens retained or those restored to liberty need sustain any appreciable damage, if their apprehension is deftly executed.

With *Lycæna corydon*, at Ventnor in 1883 and Eastbourne in 1886, I was especially successful, and obtained a most interesting series of this species in each locality, among which are specimens representing the principal varietal forms found in the "blues." I will therefore commence my observations on the genus *Lycæna* by some remarks on the aberration of *corydon* in Britain, as far at least as I am acquainted with it. Subsequently I propose to consider—1, the variation of *L. icarus* and *L. bellargus*, as observed in this country; 2, local European species of *Lycæna* allied to *icarus*, *corydon*, and *bellargus*, and forms of the latter occurring in other parts of the Palæarctic region.

Lycæna corydon, Poda.

UPPER SURFACE.

Male.—Although the coloration of the upper surface of male *corydon* seems to be fairly uniform in England, still certain slight differences in the matter of tint are to be observed when series from widely distant localities, such for instance as Eastbourne and Newmarket, are placed side by side. In the black hind-marginal border of the fore wing, however, we have a more variable feature. Referring to my specimens from Eastbourne and Ventnor, I find several from each locality with very wide black borders to the fore wings, and others in which this border is very narrow. One example from the former locality has the border so exceedingly narrow that it may be justly termed linear. Several examples exhibit indications of a row of ocelli on the hind margin, but in two specimens from Eastbourne these ocelli are quite distinct, though the whitish rings are not clearly outlined. In number there are six, or seven if the

double one near the anal angle be counted as two, of these ocelli.* (Fig. 9, Plate I, represents this form.) The black border on hind margin of inferior wings is generally ill-defined, often narrow and external to the ocelli, but sometimes it is broad and obscures the eye-spots. The ocelli in this wing are seven in number (two at anal angle close together), but only the outer halves of the white rings are clearly expressed, the inner halves being more or less invaded by the blue ground colour. The fringes are not by any means constant; for although the majority of individuals of this sex of *corydon* have the fringes plainly chequered with black and white, in many examples this character is so faintly exhibited that the fringes appear simply white. Careful examination, however, of the cilia of such specimens reveals the fact that in most of them vestiges of the black still remain.

Female.—The normal coloration of female *corydon* is, according to Dr. Lang,† “brown, with a black discoidal spot on the fore wings; all the wings with the usual hind-marginal orange band, which is pale in colour.” So far as I have observed this sex of *corydon* in various parts of England, I have not yet seen a specimen in which the orange marking of the hind-margins of the wings assumed band-like proportions. In the majority of specimens I have seen the orange marking is confined almost entirely to the inferior wings, where it appears in the shape of crescents, which are deep and not pale in colour. When these crescents are present on the fore wings they are pale, and often very obscure. One or two examples in my Eastbourne series have only the least possible trace of orange-colour, even on the hind wings. In all cases each of these orange crescents forms the internal half of a ring surrounding a black spot; the external half of the wing is generally white, but sometimes suffused with a brownish tint. When the orange is absent from the fore wings, so also are the black spots; but in the examples, previously adverted to, from the hind wings of which the orange has nearly gone, the black spots still remain. Then as to the discoidal spot on fore wings. In some examples this is difficult to discover,

* I have not many examples of *corydon* from the Newmarket district, but in those I have I find ocelli and distinct traces of crescents on the fore wings of the male, which in two examples are as clearly defined as in female specimens from the same locality. In neither sex are these crescents orange in colour, but whitish in the male and a pale fawn in female.

† ‘Butterflies of Europe.’

whilst in others it is surrounded with white or pale blue scales, and consequently very distinct. Many specimens have a discoidal spot on the hind wings also, and these too are sometimes encircled with blue scales; but in the majority no trace of any such spot is to be found on the inferior wings, even when searched for with a strong magnifier. Among the *corydon* collected at Ventnor are twenty specimens similar, as regards the discoidal spot, to the example represented, Plate I., fig. 11. Only three, however, of these are exactly identical in the character of the hind-marginal markings of the specimen figured, though several of them are but slightly modified therefrom. The fringes of all the wings in this sex are chequered brown and white, rather than black and white, as in the male. Further, the white sometimes gives place to a pale brown tint, but the chequered character is retained.* As is probably well known, the females of several species of *Lycæna* assume, more or less constantly and in greater or lesser degree, the coloration of the male. As regards female *corydon*, the most highly specialised development of this aberration is var. *syngrapha*, Kef. Although I have not seen any British example quite like Keferstein's variety, as figured by Dr. Lang,† there may be such in the collections of British entomologists. The nearest approach to it I have yet obtained is figured, Pl. I., fig. 12. Other specimens, taken with this example at Ventnor, exhibit the male colour, either on all the wings, or on some of them. Thus, one has sundry dashes of blue towards the hind margin of left inferior wing only; three others are suffused with blue at the base, and have a series of blue triangular dashes internal to the orange crescents on the hind wings; whilst a fifth has a longitudinal streak of blue along the inner margin of left primary, in addition to triangular dashes on inferior wings.

UNDER SIDE.

Male and female *corydon* are not normally alike in the colour of their under surfaces. In the first the fore wings are whitish

* The only female specimen differing from the type in this respect, which has come under my notice, is an example from Folkestone. This is slaty brown, with very indistinct orange markings and white fringes, in which the unassisted eye fails to detect the slightest trace of brown. Under a strong glass minute patches of brown are seen towards the tips of the cilia. Altogether this insect seems to resemble *L. icarus* on the upper side, but the markings of its under side are those of typical female *corydon*. It is probably a hybrid.

† 'Butterflies of Europe,' Pl. XXVI., fig. 7.

or whitish grey, and the hind wings light brown or greyish brown; whilst in the latter the fore wings are light brown, and the hind wings a slightly darker shade of the same colour. The spots in both sexes are the same in number, and similarly disposed in their respective types. As a rule, in descriptions of species of *Lycæna* the basal, discoidal, and central series of spots only are referred to as ocelli; but, though smaller, those on the hind margins of the wings are of exactly the same character, *i. e.*, they are white disks with black centres; and in the following remarks they will be considered as ocelli also. The normal arrangement of the ocelli on the under side of *corydon* is as follows:—Fore wing: Two basal, one discoidal, and seven external to this, forming a more or less curved row; beyond these again are seven on the hind margin, each preceded by a blackish crescent. As the last two ocelli of this series are always small and sometimes faint the apparent number is five only. Hind wing: Four basal, one discoidal, and beyond this seven or—as the last of the series is often a double one—eight, forming a somewhat irregular curve; on the hind margins are six ocelli, bordered internally with orange, black and white crescents, or triangular marks; a white triangular dash has its base on the fourth, sometimes extending to third, hind marginal ocellus, and its apex between the fourth and sixth ocelli of central series. All the ocelli, both as regards shape and size, as well as position, vary exceedingly; but it is unnecessary to enter into any lengthy disquisition upon the whole scheme of deviation in this or that direction from the normal type. At the same time there are three leading types of variation, which deserve full consideration. These for convenience may be styled the obsolete, increscent, and confluent phases of under side aberration.

Figure 1, Plate I., represents an extreme example of the obsolete type from Eastbourne. Between it and the normal type are many individuals from the same locality; showing various modifications as regards number of ocelli, some of which are represented by figs. 2, 3, 4, Pl. I. In what I should say is the initial stage of this form of aberration one of the basal ocelli of fore wings, generally the lower, is absent; next both basal ocelli have vanished; then the first four of the central series disappear one by one; and connected with this last is usually a decrease in the number of ocelli on hind wings.

Among the specimens from Ventnor are examples with but one or two ocelli, sometimes only the discoidal, on the fore wings, whilst nearly all the ocelli are present on the hind wings. In other specimens from the same locality the inferior pair are without any spots other than the discoidal, and the ocellated character of the primaries is almost normal. Again, the right pair of wings in some few individuals differ from the left pair in their respective number of ocelli.

Belonging to the obsolete form of aberration are three specimens received from Folkestone, one of which is shown, Plate I., fig. 5. The character of the central series of ocelli in these specimens is curious, and I can only find two examples among the Eastbourne *corydon* which at all approach it.

Departure from the normal type, in a direction quite opposite to the last, is shown in an example from Eastbourne (Plate I., fig. 7). This is a good illustration of the increscent type of aberration. As will be seen, the spots on the fore wings are not only very bold, but the basal pair are much enlarged, and exhibit a disposition to geminate, whilst a third basal spot is in evidence between them. In many other specimens from Eastbourne and a few from Ventnor each basal spot has become completely divided, so that these examples have each four distinct basal ocelli; and one of the Eastbourne specimens has also an additional ocellus, near the costa, on each fore wing, which increases the number of eye-spots of the central series to eight.

Another Eastbourne specimen (Plate I., fig. 8) represents what I am inclined to consider as probably the incipient stage of a rather uncommon aberration, known among collectors of "blues" as the "splashed" or "streaked" var. In well-marked examples of this variety the spots forming the central row are cuneiform. Modifications of this form are, however, of not infrequent occurrence; thus for instance, among others, is an example from Eastbourne, which has the fifth spot only of the central series wedge-shaped, and in several specimens from Ventnor the outer edge of discoidal spot on fore wings is projected towards the second and third ocelli of central row, whilst these two spots have each a minute dot immediately in front of them.

Of the confluent form (Plate I., fig. 6) I obtained many examples at Ventnor and a few at Eastbourne. On referring to the figure it will be seen that the lower basal spot and the sixth

and seventh of the central series unite and form a thick curved bar. The intermediate stages in the development of this variety are, in my opinion, clearly shown in other Ventnor specimens. Thus in four examples the sixth spot of central row and the lower basal spot are elongated; the internal edge of the former and the external edge of the latter approximating. Representing the next step are specimens in which the sixth central and lower basal spots are united, whilst below them and in close proximity is the seventh spot on one side and an extra basal spot on the other. These two last sometimes coalesce with the compound spot of the second stage, and form the aberration figured; or they may show a tendency, as exemplified by another specimen, to effect an independent junction below the united basal and sixth central spots. On the hind wings the first spots of the basal and central series are generally well separated, but I have seen specimens of *corydon* in which they are united. Among the individuals in my collection I have no representative of this aberration, but in one or two examples the spots referred to are contiguous, and in others the initial spot of central row is elongated, as shown in left wing of fig. 4, Plate I. Among some under side varieties of *corydon*, sent me from Folkestone, are two examples, male and female, in each of which the third basal and two last spots of central series on hind wings are united and form a curved bar. In the arrangement of the other ocelli these specimens are identical. Plate I., fig. 10, represents the female.

At Ventnor the confluent aberration was more frequently met with than either of the other varietal forms, while at Eastbourne the increscent variety was in the ascendant; but in the latter locality the dominant varietal form was in greater proportion to the normal type than at Ventnor. At neither place were examples of the obsolete form often obtained beyond the second stage.* Placed by itself such an example as that represented, Plate I., fig. 1, would probably be considered as *lusus nature*, but when connected by intermediate forms with the normal type there can be no doubt that it is a naturally developed form. If aberrations from a given type were accidental, is it probable that any two individuals, even, would exhibit exactly the same degree of variation? Or to consider the question in another way: If an

* That in which both basal ocelli of fore wings are absent.

extreme aberration is accidental, are the intermediate and connecting links obtained at the same time and place also accidental? I believe not; it appears to me that the last cannot reasonably be so considered, therefore neither can the first, because it is certainly a development of the latter.

Another interesting line of enquiry suggests itself:—Suppose it were possible to separate and completely cut off either the obsolete, increscent, or confluent forms from all intercourse with the type or other forms, what would be the result? It is not possible, for obvious reasons, to say what would ensue; but as it seems fairly certain that all the forms are reproduced year after year, even whilst associated with the type, it may be inferred that the form of aberration, possessed in different degrees by each of the individuals belonging to an isolated group, would become specialised. For instance, if all specimens exhibiting a tendency to confluency were removed apart, then a race having the characteristics of the most highly developed aberration would probably be established.

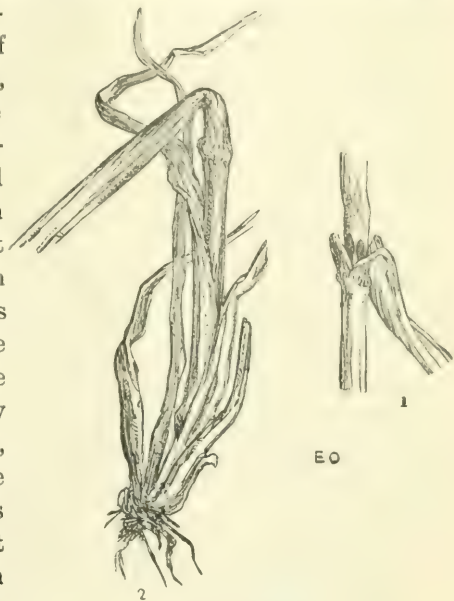
Under existing circumstances the pairing of males and females of similar aberrant forms is quite a matter of chance, but I should suppose that such unions are sometimes effected. Although the offspring of a well-matched pair of aberrations would be likely to consist of a larger proportion of individuals of the parent form, still a fair number of the descendants of a typical male and aberrant female would be found to favour the female parent. The progeny of an aberrant male and typical female would probably for the most part inherit the characters of the female parent, and I think it possible that the under-surface aberrations known as “odd-sided vars.” are due to the union of such ill-assorted couples. It will, however, be more convenient to postpone the further consideration of these matters until the variation of *L. icarus* and *L. corydon* has been referred to and certain allied species dealt with, when the whole subject can be more fully entered upon and discussed.

(To be continued.)

THE HESSIAN FLY IN BRITAIN: LIFE-HISTORY.

BY ELEANOR A. ORMEROD,
F.E.S., Consulting Entomologist R. Ag. Soc. Eng.

ON the 28th of July I received specimens from Revell's Hall, Hertford, of injured barley, which on examination precisely corresponded with the condition caused by attack of the *Cecidomyia destructor*, commonly known as the Hessian Fly. On investigation on the spot I found the puparia fixed beneath the sheathing-leaf just above the second joint, in the manner described as characteristic. They were laid lengthwise along the stem, and frequently firmly attached at one extremity, which is caused by the larva lying so motionless at the spot at which it is feeding that the stem slightly advances round the point of attachment.



Injured barley.

For the various works of authority which I have consulted on the subject I refer to my recently-published pamphlet,* as they are too numerous to be quoted here.

On the dissection of the puparia I found the larva within still little changed, and was able to identify it as a *Cecidomyioides* larva, and likewise as corresponding with that of *C. destructor* in the very peculiar form of its anchor process, which, though roughly, is clearly shown in Dr. Packard's paper on Hessian Fly (formed in connection with Prof. Riley, Dr. Cyrus Thomas, and other personal observers of the attack, published in the 'Third Report of the United States Entomological Commission, 1880').

* 'The Hessian Fly in Great Britain.' Simpkin, Marshall & Co.: London. Price 6d.

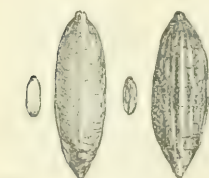
I shall perhaps be excused in mentioning that I have devoted especial attention to the study of Cecidomyioides larvæ and the form of the anchor process for some years; the subject was therefore one with which I was conversant. The peculiar alteration in colour of the larva in this early stage of partial pupation was also described by Dr. Wagner, and accounted for by him as the result of the formation of adipose matter. In a more advanced stage the colouring further changed



Anchor process.

to that stated to accompany the first development of the parts of the embryo imago.

To return now from the larval contents to the puparium. The form of this corresponded with the very exceptional form of that of the *C. destructor*. It resembled a flax-seed so nearly that on mixing flax-seeds and puparia together it was impossible at a glance to detect the difference. On more minute examination the figures of the puparia were narrower, and, though they had the flattened form of the flax-seeds, they were distinguishable by one extremity having a mark across, as if it had been pinched in at one end, the other being slightly bent forward. These appearances are characteristic of the *C. destructor* puparia at this stage.



E.C.

Pupa, &c.

At first (as it was an early condition of pupation) I did not find the longitudinal striæ; the outer skin, which had changed to chestnut-brown of lighter or darker tints, according to its age, still preserved the slight transverse markings, showing the divisions of the segments in the larval state. As the colour deepened the striæ appeared, and were clearly visible running

longitudinally from one extremity to the other, in the manner shown in my own figure, from life, accompanying.

As I was unwilling to rest on my own opinion in such an important matter, I forwarded specimens of the infested stems to our Life-President, and trust I shall not be out of order in giving his own words. After just thanking me for details, &c., "of attack of the Hessian Fly," he wrote, "There can be no doubt that such is really the true 'Simon pure'; more's the pity." On sending further specimens, Prof. Westwood wrote with regard to

these "stems and also puparia of the Hessian Fly. The latter agree exactly with Austrian specimens I received from M. Lefebvre many years ago, sent to him by Dr. Hammerschmidt, of Vienna." I further forwarded specimens and full details to Professor W. Saunders, President of the Entomological Society of Ontario, Canada, whose entomological position is too well known to require any observation from myself, and who was eminently qualified from personal scientific and practical knowledge of the attack to offer an opinion, and from him I received the statement:—"The wheat-stem pests, enclosed in your letter, which are embedded in the stalks of the wheat, are without doubt the true Hessian Fly in its pupal condition, known as the flax-seed state." I may add that in his presidential letter to the Entomological Society of Ontario, recently delivered, Professor Saunders officially announced the appearance of the Hessian Fly in Great Britain from my specimens and details, my letter of details being read by Mr. James Fletcher, the Consulting Entomologist of the Department of Agriculture of the Dominion.

In regard to development of the imago and determination of the same:—On the 8th of September an excellent specimen developed. By forming a long wand of twisted paper and just moistening the tip with a little chloroform I secured the imago without injury, and also still so far alive that I was able to watch it through the changes of tint, described by Dr. Wagner, from a golden brown, through the shades of mulberry with transverse black bands above on the first six segments of the abdomen, on to the general brown tints of the abdomen, in which the difference of appearance of the black velvety spots on the sides of these segments almost disappear, and the black transverse bands are not very noticeably different in tint from the browner colour. The an-



tennæ and tarsi, and all the points that it was possible for me to examine, precisely corresponded with those of *C. destructor*,—I do not say with the description given by this or that observer, as in a case of this enormous importance I examined into the

points of all the best descriptions, and where the points were not clear tabulated the descriptions in parallel columns that I might be absolutely certain. The only point in which I found a marking not recorded in the descriptions is, that when I placed the specimen upright, so as to have a view of the upper part of the abdomen, I observed a minute marking, like a V, with two small lines, one on each side of it, which marking was placed in somewhat darker or greyer tint than the yellowish colour of these segments on a portion of the 7th and 8th segments of the abdomen. This slight marking, it is unnecessary to say, is not material to specific differentiation.

Above I have mentioned that I found the imago correspond with that of the *C. destructor* "in all the points in which I was able to make comparison," because I did not feel I could be certain of the presence or non-presence of the lamellæ at the extremity of the ovipositor, which are important points in identification. I therefore forwarded the same specimen to Mr. R. H. Meade, of Manningham, Bradford, who was good enough to examine into the matter, and ascertain clearly that the *lamellulæ* were not present.

To those who are acquainted with the characteristics of *C. destructor*, it will be of interest to know that in this point, in the pediculated joints of the antennæ, in the terminal joint of the antennæ of the female being half as long again as the penultimate, and in the minute points of the neurulation of the wings, the imago which I developed from the British puparia precisely agreed with the description of *C. destructor*, to be gathered by collation, of the points of structure, as well as colour given, by the entomological writers of U.S.A., Canada, and such of the chief European writers as I have quoted above, or had the opportunity of consulting.

Once again, with regard to confirmation, I may be permitted to say that, after minute investigation, I was favoured by Mr. R. H. Meade with the distinct statement:—"I have no doubt whatever about your insect being the true *Cecidomyia destructor*"; and further on in his letter, after giving me point by point the results of his examination, he adds:—"I have no doubt that the real Hessian Fly has made its appearance here."

Since this letter I have had the opportunity of submitting my whole series of specimens to Mr. John Marten, of Albion,

Illinois, who, whilst Dr. C. Thomas was State Entomologist of Illinois, was one of his assistants. As it is from the work of Dr. C. Thomas that the paper on Hessian Fly, published by the Entomological Commission of the U.S.A., is stated by Dr. Packard to be mainly prepared, and as Mr. J. Marten (Dr. Thomas's assistant) has especially devoted himself to the study of this insect, his opinion is one of much value.

I have now the honour to mention to the Society that in every condition, from that of slightly-changed larva up to imago watched through all its changes of colour, the insect under discussion corresponds with the *Cecidomyia destructor* of Say; that the injury to the corn-stalks also corresponds exactly; and, further, that I have received the confirmation of these points on personal examination of my specimens from the high authorities mentioned above. To this I may add that the work of the later brood is also now (or up to my last communication) on the self-sown, or late-sprouted plant, as described in the States. The figures which accompany I have drawn from life.*

THE GENERIC POSITION OF *GRAPHOLITHA* (?) *CÆCANA*.

By J. W. TUTT.

I THINK it is nearly time that the true position of the little Tortrix *cæcana* was settled in our list in a satisfactory manner. It is, I believe, a general opinion among those who know anything about the insect that it is altogether out of place in the position Mr. South has assigned it, *viz.*, at the end of our present genus *Grapholitha*, a position, as my friend Mr. Coverdale remarked (Entom. xviii. 219), "which seems about as bad a place as one could find for it."

When Mr. Coverdale first discovered the species in this country in July, 1884, he described it under its continental name, *Grapholitha cæcana*. I suppose most of our entomologists know that there is a greater difference between the continental and British generic divisions of the Tortricina than between those of any of the other large groups, and that our genus

* Abstract of a paper entitled 'Observations from life of *Cecidomyia destructor*, Say,' read at the Entomological Society of London, 1st December, 1886. For the series of figures which accompany we are indebted to the kindness of Miss Ormerod.

Grapholitha is only a very small subdivision of the continental genus of the same name. The continental genus contains a pretty good mixture of our genera, containing species belonging to no less than fourteen of our generic divisions. These are *Ephippiphora*, *Catoptria*, *Endopisa*, *Coccyx*, *Phlæodes*, *Pædisca*, *Spilonota*, *Pardia*, *Penthina*, *Stigmonota*, *Semasia*, *Trycheris*, and *Opadia*; whilst among the species we find forms as widely divergent, as *grandævana* and *corollana*, as *ophthalmicana* and *undana*. In this continental genus, *cæcana* is almost immediately preceded by our species, *Catoptria hypericana*, *C. albersana*, *Endopisa nigricana*, *E. nebritana*, and *Opadia funebrana*, and followed by *Catoptria ulicetana*.

It is easy to understand how the insect was placed at first in our genus *Grapholitha*. At the time of its discovery it was, as previously mentioned, described by Mr. Coverdale under its continental generic name. Just at that time Mr. South was working out his new list (since published), and attached the species at the end of our genus of the same name. Of course it follows that if our generic nomenclature is to stand, an insect belonging to a comprehensive continental genus, like that under consideration, which is discovered for the first time in this country, should be placed in that genus to which its affinities show it to be the most nearly allied. *Cæcana* has certainly no direct affinities with our present genus *Grapholitha*, and it bears a very great resemblance to some of the species in our genus *Catoptria*, and is, in external structure and appearance, closely allied to *hypericana* and *ulicetana*.

It is to be noticed also that in Stainton's 'Manual,' where the continental genus is broken up, a part of our present genus *Catoptria* is retained under the name of *Grapholitha*, and that the genus *Grapholitha* of later lists is formed from parts of three genera,—*Lithographia*, *Hedya*, and *Steganoptycha*. Had Stainton's genera stood, *cæcana* would, among the insects there included, have had a very natural position assigned it. Those who still retain Stainton's system of classification, would do well to retain the insect in the genus.

It is in the newer arrangements that the present false position of the insect stands out most glaringly. In assigning it a position in our lists there seems to be two chief points to take into consideration: first, the general structure and habits of the

imago; secondly, the economy of the larva and its manner of feeding. And here at once a difficulty presents itself, and shows how artificial and unscientific our present arrangement of the Tortricina is. The most natural position, according to the habits and appearance of the imago, is next to *C. ulicetana* and *C. hypericana*; and this is practically its position in the continental lists. To those who think the general appearance of the imago everything, and its earlier stages of no importance, the matter would be settled; but to those who think with me, that the economy and structure of the larva, its manner of feeding, &c., are of the utmost importance in classification, what is there really in the description of the larva and its habits, as given by Mr. Coverdale, to induce us to place the insect in this position? But whilst we retain the present system of classification, all we can ask is that the insects that may be added to our list shall be placed at any rate in some genus where they present no striking contrasts, either in general appearance or habits, and thus make bad matters worse. Our present genus *Catoptria* contains at any rate insects that have great external resemblances, and, under our present system, I think it would be well to place *cæcana* between *ulicetana* and *hypericana*, directly before the latter species, and in future drop the generic name *Grapholitha* for that of *Catoptria*.

Rayleigh Villa, Westcombe Park, S.E.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA.—The following records have been received of the capture of this species during the past season.—J. T. C.

In the neighbourhood of Deal I took a male *C. edusa* on the 11th, and a female on the 30th of August, both in fine condition. On the 28th of same month I captured, in the same locality, an almost perfect specimen of the variety *helice*.—R. JAMES; Tray's Hill, Upper Holloway, N.

I took five male *Colias edusa* during the last week of August, near St. Leonards, and I saw as many more, males or females, which I failed to secure. From my experience of *C. edusa* in other years in the above locality, I should say that it has been decidedly scarce this season.—ALBERT BONUS; Exeter.

SPHINX CONVULVULI.—At Crouch End, last autumn, I saw a specimen of *Sphinx convulvuli* just under a gas-lamp close to Highgate Archway, but, not having a net with me, I could not capture it. A friend also received a specimen from Lowestoft, taken last season.—R. JAMES; Upper Holloway, Dec. 6, 1886.

SPHINX CONVULVULI.—This insect, which was unusually plentiful in this neighbourhood last year, has been of very rare occurrence this year. I had a specimen brought me on October 4th, which is the only one I have seen. For several evenings in September I watched flowers which are attractive to this *Sphinx*, but I did not see one. Mr. Adye, of Somerford, met with the same bad luck, after having watched attentively for several weeks. Mr. Edgell seems to have been very fortunate at Lewes.—A. DORRITT; Christchurch.

CHÆROCAMPA CELERIO AT HASTINGS.—I have in my possession a male specimen of the above, taken at the latter end of September, 1886, in a small garden in the suburbs of this town, by Miss Gooch. It was seen the day before its capture in the same place. It is in perfect condition, and apparently had not long left the pupa state. I see Morris, in his work, gives St. Leonards as a locality for it, and another specimen was recorded as being captured there last year.—CHARLES PARTRIDGE, Major; Royal West Kent Regiment, Tonbridge, December 30th, 1886.

BOMBYX QUERCUS, CALLUNÆ, OR ROBORIS?—In looking over the other day some old numbers of the 'Entomologist,' I came upon an article by the late Edward Newman on this subject. It occurs in No. 10, January, 1865 (vol. ii., p. 137), and contains a full life-history of *B. callunæ*, the same of *B. quercus*, followed by a differentiation of the two species, which seems to have been made out with great care. Perhaps the differentiation might be repeated for the benefit of those who do not possess the early numbers of the 'Entomologist,' unless there is good ground for supposing that Newman subsequently altered his opinion. His account of *B. quercus*, in his 'British Moths,' looks rather as if he had. My own knowledge of the subject is perhaps not worth much, but here it is. At Hayward's Heath, Sussex, where I lived till within the last few months, and collected for many years, I both took and bred females of *B. quercus* or *callunæ*, pale and dark. I never noticed any difference between the

larvæ; but the cocoons from which the pale females emerged were light brown, those from which the dark ones emerged were nearly black. I never had any of these larvæ feeding on ling, and never had, as far as I recollect, any stay over in the pupa state till the second year, so I concluded that I had only varieties of *B. quercus*. I formed my collection under the disadvantage of working almost alone, and without opportunity, except on very rare occasions, of seeing any other collection. After reading lately Newman's differentiation of these species, I should be much inclined to think that I have both *B. quercus* and *B. callunæ* in my series were it not that I am quite certain I never had any larvæ feeding on ling. But then some of the specimens I caught flying might have fed on ling.—T. E. CRALLAN; Emsworth.

THE GENUS SCOPARIA.—Since the appearance of my note on this genus (Entom. xviii. 129) much progress has been made in working it out. Mr. Banks has, with Mr. Stainton's assistance, satisfactorily disposed of *phæolucalis* by striking it out of our lists altogether, and relegating our English specimens to the sub-rank of a variety of *mercurella*, under its original name, *portlandica*. Mr. Mason recently has telescoped *conspicualis* into the long lost *ulmella*, thereby sending another of our northern names after so many of its predecessors, while *zelleri* and *gracilalis*, except with a few who still cling convulsively to our printed lists, have respectively sunk quietly into *cembræ* and *alpinalis*. Much, however, still remains to be done. Inspection of a large number of *basistrigalis* has shown that there is a form as nearly as possible intermediate between that species and *ambigualis*, but to what this fact will eventually lead us I am at present unable to say. Possibly *basistrigalis*, distinct as it appears, may in time have to sink as a variety of *ambigualis*. Similarly the specimens forming the intermediate links between *ambigualis* and *atomalis*, render the position of the latter very unsatisfactory; while we still want some definite boundary line between *mercurella* and *crategella*. If, during the ensuing season, entomologists would turn their attention to these species, carefully labelling each specimen with its locality and date, we might, by the end of 1887, have the genus once more in a clear and intelligible state. C. A. BRIGGS; 55, Lincoln's Inn Fields, December 18, 1886.

TRIGONOPHORA FLAMMEA BRED.—This autumn I have succeeded in rearing eight specimens of *Trigonophora flammea*
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(*emphyrea*), two being crippled and the rest fine specimens. The larvæ, which hatched out on the 4th of December last from ova laid about the middle of October, were kept through the winter in a room without a fire, feeding on low plants, chiefly buttercup (*Ranunculus bulbosus* and the allied species), and later on the lesser celandine (*R. ficaria*), but they do not seem to be attached to any particular plant, and I have not noticed the lesser celandine growing in the locality for the imago. They were feeding all through the winter, but grew very slowly. As the larva has been already well described by Mr. Woodbridge in the 'Entomologist' for June, 1885, I need not attempt any further description, as no doubt he had the larva in its last stage. Towards the end of April, the larvæ, having changed their skins for the last time, and become brown instead of bright green, as they had been through the winter, refused the various low plants offered to them. I then supplied them with shoots of privet and the blossom and young buds of ash. They took readily to the latter, and several spun their loose earth cocoons near the surface of the ground about the middle of May. Several larvæ died about the middle of April, probably from being kept in jars without sufficient ventilation during the winter. The moths emerged rather later than the species does as a rule in a wild state, the first emerging on the 8th of October and the last on the 20th. The species was very scarce near here this autumn; in fact, I only took three fine specimens, and two of those were on the 24th of September. All attempts at forcing the larvæ in the winter failed, and the only pupa which did not produce a moth was one I tried to force. Some larvæ of *Agrotis saucia*, placed in a hothouse towards the end of last December, fed up rapidly and produced imagines in February and March.—WILLIAM EDWARD NICHOLSON; Lewes, November 22, 1886.

EUMENES COARCTATA AND ITS PARASITE.—Mr. W. McRae, in November, sent two cells of *Eumenes coarctata*, and four ichneumonons which had been bred from them; two of the parasites were males of *Linoceras macrobatus*, a very rare Cryptid. Mr. Pascoe took a male at Ventnor; this, I believe, is the only one that has been taken recently in Britain. Perris and Graf bred it on the Continent from *Eumenes coarctata*, and Giraud from *Osmia adunca* (see Entom. xvi. 36). These are, so far as I know, the only records of *Linoceras* having been bred.

It is very interesting to find that it has been bred in England from the same host. *Eumenes* is a rare insect in this country, and consequently the parasite is probably rarer. The cells of the wasp were taken by Master Fred. Wolamore at Bournemouth early in May last; they were attached to charred twigs of heath, which had been burnt down in February, 1886, so that the cells were formed in the spring. Each cell was kept in a separate glass-topped box, and from each issued a male *Linoceras*,—one on June 14th, and the other on June 20th; but, singular to relate, the former of the two had two companions, for on May 28th a Bracon issued from the same cell. This has been sent to the Rev. T. A. Marshall, who, from the examination of a single specimen only, does not like to be positive, but believes it to be *Rhogas modestus*, Rhein., a species new to Britain, and very like the common *R. conscriptus*; and on June 14th a specimen of *Campoplex subreptus*, Tst., was bred. The fact of these latter being bred from the same cell as a *Linoceras* looks very like being a case of instinct at fault; both the Bracon and the *Campoplex* have an aculeus too short to pierce the cell and sting the *Eumenes* larva. The only other way I imagine the parasites could get into the cell is that the female *Eumenes* must have taken larvæ for her young which had previously had the ichneumon egg deposited in them, and the parasites were the first to suck the juices from the deposited larvæ, and were protected by the dry skins from the *Eumenes* larva. These two small cocoons, Mr. McRae says, laid between *Eumenes* pupa and the wall of the cell. Master Wolamore has very kindly given me one of these very rare ichneumons.—J. B. BRIDGMAN; Norwich.

HENICOSPULUS MERDARIUS BRED.—Mr. B. A. Bower very kindly sent me *Henicospilus merdarius*, which he had bred from *Hecatera serena*, on the 12th October last. As this latter is a new victim for *H. merdarius*, I think it is worth recording. This species, at first sight, looks very much like a testaceous *Ophion*, so often seen on the gas lamps in rural districts, but can be very easily separated from it by the fore wing having two horny spots in the first cubital cell.—G. C. BIGNELL; Stonehouse, Nov. 29.

ERRATA.—Entom. xix., page 302, line 4 from bottom, for "variation" read "variations"; l. 7 from bottom, for "experiment" read "specimen." P. 305, l. 22, for "April" read "May."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *December 1st, 1886.*—Robert McLachlan, Esq., F.R.S., President, in the chair. Mr. W. H. Miskin, of Brisbane, Queensland, Mr. R. E. Salwey, of Folkestone, and Mr. F. W. Biddle, M.A., of Beckenham, were elected Fellows. Mr. Howard Vaughan exhibited a long series of *Gnophos obscurata*, comprising specimens from various parts of Ireland, North Wales, Yorkshire, Berwick-on-Tweed, the New Forest, Folkestone, Lewes, and the Surrey Hills. The object of the exhibition was to show the variation of the species in connection with the geological formations of the various localities from which the specimens were obtained. Dr. Sharp showed a series of drawings of New Zealand Coleoptera, by Freiherr von Schlereth, which, though executed in pencil, were remarkable for their delicacy and accuracy. Mr. R. Adkin exhibited specimens of *Cidaria reticulata*, recently bred by Mr. H. Murray, of Carnforth, from larvæ collected by him near Windermere, on *Impatiens noli-me-tangere*. Mr. Adkin said that as the food-plant was so extremely local, and consequently difficult for Mr. Murray to obtain, he had endeavoured to get the larvæ to feed on some other species of balsam, including the large garden species, usually known as Canadian balsam, but that he had not succeeded in doing so. Mr. E. B. Poulton observed that this statement tended to confirm the remarks he made at a recent meeting of the Society on the subject of the habits of lepidopterous larvæ with reference to their food-plants. Mr. Billups exhibited a number of living specimens of *Aleurodes vaporariorum* (Westw.), obtained from a greenhouse at Snaresbrook, where they had caused great havoc amongst tomato plants (*Lycopersicum esculentum*). He remarked that the species had been first figured and described by Prof. Westwood in the 'Gardener's Chronicle,' 1856, and that attention had been recently called to it by Mr. Douglas (Ent. Mo. Mag. for December). Mr. J. Jenner Weir stated that plants in his greenhouse had been attacked by the same species. Mr. Poulton exhibited the bright green blood of the pupa of *Smerinthus tilia*, which is one of many lepidopterous pupæ possessing a chlorophyll-like pigment (called meta-chlorophyll by Mr. Poulton) in the blood. The blood of the larva contains the same pigment in a much smaller amount, while in the pupa the additional colouring-matter fixed in the

larval hypodermis cells also passes into solution in the blood. By means of a Zeiss micro-spectroscope, Mr. Poulton was able to show the most characteristic absorption-band of the pigment, together with its resemblance to chlorophyll. Mr. G. T. Porritt exhibited forms of *Cidaria suffumata* from Huddersfield, including one very similar to that taken at Dover by Mr. Sydney Webb (Proc. Ent. Soc. 1886, p. xxv); and one still more extreme, having only the basal mark and the central stripe, with a slight streak at the tip, brown, the remainder of the wings being perfectly white. He also exhibited a series of small bilberry-fed *Hypsipetes sordidata* (*elutata*) from Huddersfield, showing green, red-brown, and black forms. Mr. S. Stevens exhibited forms of *Camptogramma bilineata* and *Emmelesia albulata* from the Shetland Isles, and a curious variety of *Chelonia caja* from Norwich. The Secretary read a letter from the Administrator-General of British Guiana, on the subject of the urticating properties possessed by the larvæ and pupæ of certain species of Lepidoptera collected in Demerara. Mr. M'Lachlan read "A note concerning certain Nemopteridæ." Miss E. A. Ormerod communicated a paper "On the occurrence of the Hessian Fly (*Cecidomyia destructor*) in Great Britain." It appeared from this paper that there could be no longer any doubt as to the occurrence of the insect in this country, specimens obtained in Hertfordshire having been submitted to, and identified by Prof. Westwood, and by Mr. W. Saunders, of London, Ontario. Prof. Westwood said the specimens agreed exactly with Austrian specimens in his possession, sent to him some years ago by Mons Lefebvre, who had received them from the late Dr. Hammerschmidt, of Vienna. A discussion followed the reading of this paper, in which the President, Mr. C. O. Waterhouse, Mr. Theodore Wood, and others, took part. At the close of the Ordinary Meeting a Special Meeting was held, for the purpose of considering certain proposed alterations in the Bye-Laws. The proposed alterations having been explained to the Meeting, were, after some discussion, agreed to, and the proceedings terminated.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*December 2nd, 1886.* R. Adkin, Esq., F.E.S., President, in the chair.—Mr. W. Farren, of Cambridge, was elected a member of the Society. Mr. Wellman exhibited examples of *Satyrus semele* and *Lycæna icarus* from Ireland.

Mr. Tutt, long series of the genus *Agrotis*, and, for the purpose of comparison, some specimens of *A. cursoria* and *A. aquilina* from Mr. Percy Russ, of Sligo. In Mr. Russ's box were specimens of *Epunda lutulenta*, vars. *luneburgensis* and *sedii*. Mr. Tutt contributed some observations on his exhibit. Mr. Adye, varieties of *Hemerophila abruptaria* and *Epinephele ianira*. Mr. R. South, various species of *Rhopalocera* from the Amor Valley, Siberia. Mr. Adkin, *Cidaria reticulata* and varieties of *Sarothripus undulatus*, Hb., from the New Forest. Mr. Tugwell, a number of insects from New Caledonia, among them a specimen of *Chærocampa celerio* similar to the type found in this country. Dr. P. Rendall, *Vanessa antiopa*, also a specimen of *Noctua festiva*, var. *conflua*; a discussion ensued as to whether *conflua* was a distinct species or not. Mr. Hall, a specimen of *Locusta viridissima* taken at sugar. Mr. Tugwell stated he had frequently seen this species at sugar on the sand-hills, Deal, and in his opinion it came there for the purpose of feeding on the moths that were attracted by the sugar, as he had many times seen it make a meal of as large an insect as *Phlogophora meticulosa*. Several other members contributed remarks on Mr. Hall's exhibit. Mr. Billups exhibited a species of Coccidæ, *Aleurodes vaporariorum*, Westw., taken from a greenhouse at Snaresbrook, Essex, December 2nd, on the leaves of tomato, *Lycopersicum esculentum*, where it had been doing an immense amount of damage to the plants. He stated the species was first described by Professor Westwood in the 'Gardeners' Chronicle' for 1856, but for a later description he would refer members to the 'Entomologist's Monthly Magazine' for December, where it was described by Mr. J. W. Douglas, to whom he was indebted for the identification of the species. Mr. South read a short paper on "British Snake-like Reptiles."

December 16th, 1886. The President in the chair.—The following gentlemen were elected members: Mr. F. W. McDonald, Mr. C. A. Briggs, Mr. T. H. Briggs, Mr. W. L. Distant, Mr. H. Hutchinson, Mr. J. A. Clarke, Mr. G. Skinner, and Mr. C. S. Bouttell. Mr. Adye exhibited *Sphinx convolvuli*, taken at Christchurch, 1875, and he remarked that although he had been out about forty nights during the past autumn he had not seen a single specimen. Mr. Adkin exhibited, on behalf of Mrs. Hutchinson, a male specimen of *Stauropus fagi*, with female

antennæ. Mr. Dobson, wasps' nests of the genus *Odynerus*, found under a doorway in the New Forest. Mr. Billups, three species of Ichneumonidæ, new to Britain, viz., *Bassus bizonarius*, taken in his garden at Peckham, May, 1885; *Erromenus* (*Trichocalymma*, Foerst.) *plebegum*, Wolds., taken at Dulwich, June, 1885; *Perilissus triangulatus*, Bridgm., the male from Peckham, and the female from Dulwich, May, 1885. Mr. Billups stated he was indebted to his friend Mr. J. B. Bridgman, for the identification of these species, which he had fully described in a paper read before the Entomological Society of London, July 7th, 1886, and printed in the Society's Transactions for 1886. The Secretary then read the Council's Report, and the Treasurer an abstract of his accounts for 1886. The election of officers for the coming year was next proceeded with, and resulted as follows:—Mr. R. Adkin, President; Mr. R. South, Vice-President, Mr. E. Step, Treasurer; Mr. Chaney, Librarian; Mr. W. West (Greenwich), Curator; Mr. H. W. Barker, Secretary; and Messrs. T. R. Billups, J. T. Carrington, W. A. Pearce, W. H. Tugwell, J. R. Wellman, W. West, and J. Jenner Weir, Council.—H. W. BARKER, *Hon. Sec.*

REVIEW.

Rhopalocera Malayana: a Description of the Butterflies of the Malay Peninsula. By W. L. DISTANT. Royal 4to, pp. 481; 46 Coloured Plates and 129 Woodcuts. London: W. L. Distant, care of West, Newman & Co. Penang: D. Logan, Esq.

THE first part of this magnificent work was reviewed in the 'Entomologist,' 1882, pp. 118, 119. The anticipation then formed, that the result of Mr. Distant's laborious undertaking would prove a masterpiece, has been fully justified. There can be no doubt that the author has produced a really standard work, which will be quite indispensable to the student of the *Rhopalocera* of the Indo-Malayan sub-region, and also of the greatest value to students of the order in the sub-regions contiguous. The character of the chromo-lithographed plates, which in the former review were said to be all that can be desired, has been fully sustained throughout the volume. One of the most instructive parts of the work is the very careful manner in which the geographical distribution of each species

has been given. This must have entailed great labour upon the author, but its value can scarcely be over-estimated.

Mr. Distant appears to have encountered the usual difficulty in defining the limits of a species, but his remarks on this head are very sound, and he has an excellent method of generalising the differences between closely-allied races or species; for instance, at page 28 he points out that between *Euploea diocletianus* of Northern India, *E. rhadamanthus* of Malacca, and *E. lowii* of Borneo, the principal difference is that of a gradually increasing melanism, which is least in the North Indian and greatest in the Bornean form. Such truly philosophic observations, with which the book abounds, render the reading of it a delight.

The author makes very short work of mere variation, and suppresses Mr. Moore's name of *Danais* (*Salatura*) *intermedia* for the variety of *D. genuta* with a more or less white ground to the under wings; on the other hand he gives full prominence to the name conferred on a well-marked boreal race; for instance, *Danais melanippus* is a Javan species, not found in the Malay Peninsula, where its place is taken by *Danais melanippus* var. *hegisippus*, as Mr. Distant terms it. This differs from the type in having a white ground to the under wings, but this difference is constant, and not occasional as in *Danais intermedia*, Moore. This last name is not well chosen, although it is desirable to have some name to express the difference between the type and a well-marked variety. Mr. Distant has, therefore, in a similar case, adopted the name of *Danais chrysippus* var. *alcippoides* for the variety of that species, with white in the centre of the under wings, and has figured it, Plate XL., No. 13; still this variety is occasional only. The variety of the dark African form of *D. chrysippus*, *alcippus*, is in many parts of that continent the common, if not the only form; at Accra and the Cameroons, for instance. It is singular that in several species, and in widely different parts of the world, there should be a tendency in the red Danaine butterflies to have a variety with white under wings; indeed in the case of *Danais* (*Salatura*) *edmondi*, from the Philippines, the white colour extends to the upper wings, which have but a faint trace of rufous. Can this whiteness be due to reversion to the colour of an ancestor the common parent of the species now placed in the genera *Limnas* and *Salatura*?

In conclusion it may be said that the work is a credit to the author, the chromo-lithographer, and the printer.—J. J. W.

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ON MELANISM.

By N. F. DOBRÉE.

So much has been written on this subject that it might be considered threadbare; but as it has always been treated from a purely insular point of view it is permissible to take it up once more and examine it from the broader basis of its bearing on European insects generally. British entomologists apparently overlook that from such a standpoint the matter can be presented in a fresh light, which may tend to disprove more than one of the theories which pass current amongst us. I propose to do so briefly.

Adopting as a means of comparison Dr. Staudinger's definition of the range of European Lepidoptera (though perhaps it is questionable how far he is justified in including Central Asia within its limits), let us pass to a careful examination of any of the large collections in continental museums, carefully noting the habitat of the species before us. The first striking feature is the generally larger size which prevails in the imago and also in the larva, so far as opinion of the latter can be formed from preserved specimens. We also note that the imago type is uniformly of distinctly lighter colouring than our own, and that where variations occur they are usually in the direction of a lighter rather than a darker shade. So many examples of this may be given that I only note a few taken from my collection:—*Orthosia suspecta*, to warm light grey in Austria. *Hadena dissimilis* (*suasa*), beautifully variegated, suffused with pink in Central Germany. *H. adusta*,

quite light brown, powdered with grey on the borders of the Baltic. *Dasyampa rubiginea*, lighter shade of colour, and also quite unicolour, Central Germany. *Miana literosa*, pale slate grey and almost unicolour in various parts of Germany.

If we now proceed with our examination, and lay a map of Europe before us, it will be found—taking, say Central and Southern Germany as a starting-point—that melanism gradually becomes perceptible as the eye takes a North-west direction, and directly the Channel is crossed has become decidedly marked, if we place even our most southern English forms in juxtaposition with those at our starting-point. As we continue to travel mentally in a North and North-west direction through the British Isles this increases in intensity, until it finally culminates on the western coast of Ireland, and especially in the extreme north of Scotland and outlying islands.

Returning now to our point of departure, and travelling in imagination due Northwards, the curious feature will appear that no melanism such as ours will be found along the most northern littoral of Germany or Denmark, neither will it be found if we take a north-easterly line through European Russia and Siberia. Stranger still, neither this nor reduced size is apparent when the Arctic Circle is entered; and the most marked feature which presents itself in high latitudes is in the quite opposite direction of a tendency to light colouring and obliteration of markings.

[As illustrations I give some of the most marked variations drawn from my own collection, but they could be largely supplemented. Thus:—*Agrotis segetum*, *Noctua festiva* ? *conflua*, *Teniocampa gracilis*, *Pachnobia hyperborea*, *Anchocelis rufina*, *Xanthia gilvago* (after passing through a lighter variety, *pyrrhago* bears on the Amur a close resemblance to *flavescens*), *Phlogophora meticulosa*, *Hadena pisi*, *Brepheos parthenias* = *infans*, *Euclidia glyphica*, all have the markings more indistinct and a generally fainter colouring, with a glaucous tendency, not observable in any of our most southern English forms.

To be, however, impartial, there are a few occurrences in the opposite direction of darker colouring, such as *Thyatira derasa*, *Leucania impudens* (*pudorina*), *L. turca*, *Noctua plecta*, but all with a glaucous shade. These comparisons might be continued into Canada, where the whole of the Noctuidæ bear close resemblance to European and especially British forms, and indeed many are

identical, but where the melanism which occurs with us is quite unknown.

It cannot fail to be observed that these illustrations are all taken from the Noctuidæ. This great division has always interested me most owing to the great variation in the species, but in a superficial examination of the other divisions I have seen the same rule hold good.]

This at once fixes the fact that melanism is of purely British occurrence, thereby upsetting the assumption of our theorists—who indeed do not say so in as many words, but evidently desire it to be inferred—that darker colouring and reduced size is a feature of high northern latitudes. Notably it destroys Lord Walsingham's latest and ingenious theory that a large expanse of white snow tends to produce it, for if it were true in Great Britain it must of necessity be much more pronounced within the Arctic Circle; this, however, is not supported by actual observation.

Another feature in the examination of a large continental collection, which still has to be explained, is that if we once more return to our starting-point in Central and Southern Germany, and turn our eyes southwards, it will be found that the prominent features of lighter colour and fainter markings of high northern latitudes again become apparent. Thus, *inter alia*, in Sicily and Spain, *Acronycta megacephala*, *Leucania lithargyria*, *Aporophyla australis*, *Agrotis trux*, *Noctua xanthographa*, *Hecatera chrysozona* (*dysodea*), *Hadena peregrina*, *Anchocelis litura*, *A. lunosa*, *Luperina dumerili*, are all more or less lighter, with glaucous shade of colour. In Asia Minor, *Triphæna ianthina* and *Amphipyra tragopogonis* are distinctly larger and more grey. In Russian Turkestan, *Asteroscopus nubeculosus* and *Calocampa exoleta* are quite ashy grey; and *Caradrina cubicularis*, *Charæa graminis*, *Noctua flammatrix*, paler and lighter, with the same tendency to glaucous. In fact nearly all the Noctuidæ which I have seen from the borders of the Mediterranean have this glaucous tendency.

The absence of melanism in continental Europe is not, however, without its exceptions, for in the high alps of Switzerland, Styria, and Carniola it occasionally appears. *Agrotis trux* there becomes identical with our *A. lunigera*, *Hadena dentina* is as dark as specimens from Shetland, *Acronycta euphorbiæ* becomes

var. *montivaga* (= *myricæ*), and several non-British species which are light in Central Germany change similarly to a melanic shade.

Thus far this paper is a mere record of facts, which it is within the reach of any entomologist to verify on his next autumnal tour on the Continent; but the inference can be drawn that we originally owe our insular fauna to migration from the south, and that melanism is primarily due to the peculiar geographical position of these islands. This wave of migration was arrested on reaching our most northern shores with the natural outcome of stunted forms, and melanism became the result of the want of the accustomed succulent food, and of a climate, warmer certainly than that within the Arctic Circle, but still sufficiently cold and with sufficiently short summers to arrest the development capable in the milder climate of the insect's original home. The appearance of melanism in the high mountainous regions of continental Europe, where the same causes obtain, as in our extreme north, help to support this view. Yorkshire melanism may be treated as merely local aberration, not affecting the general question.

In these days of close enquiry it is rather surprising that no lepidopterist has thought of rearing some of our Shetland species from the egg,—say *Noctua festiva*, which is a conspicuous and common example,—and experimenting whether the succulent food and milder climate of Southern England will not, in one or two generations, reproduce our southern form.

Writing this paper leads on to an expression of regret, which must be felt by many, that we have in England no central body to look up to for information and reference. In these days of progress it may be worth the consideration of the Entomological Society of London, since its incorporation by Royal Charter, to place itself in touch with provincial societies, and make itself in reality the head and exponent of British Lepidopterology.

New Walk House, Beverley, E. Yorks, January, 1887.

ON THE “*LITA*” GROUP OF THE GELECHIIDÆ.

BY J. W. TUTT, F.E.S.

CAN any of our entomologists give me any information with regard to that part of the *Lita* group of the Gelechiidæ containing

the following species:—*marmorea*, Hw., *junctella*, Dougl., *vicinella*, Dougl., *leucomelanella*, Sta., *maculiferella*, Sta., *knaggsiella*, Sta., and *semidecandriella* (n. s.)? I know *marmorea* well. I have taken *maculiferella* among hawthorn in Westcombe Park (close to my house); and on the sand-hills at Deal I have taken a large number of specimens belonging to this group, forming in their extreme variations four very good types, but connected by almost every possible intermediate form. The following are the principal types:—

No. 1 is a very pale, greyish white form, with a very dark and distinct black line crossing the anterior wings obliquely from the costa, commencing at about one-fourth from the base, and extending not quite across the wing to the inner margin, which, if continued, it would meet at one-third from the base. Near the hind margin is a very pale slightly curved line, and between this and the hind margin the ground colour is rather darker grey than the rest of the wing. It has also a conspicuous black spot on the disk of the wing, and one—in two or three specimens—at the apex.

No. 2 is exactly like No. 1 in ground colour, but is without the black oblique line (which is reduced to a second dot in the centre of the wing). The only recognisable markings are the pale curved line and the two dots on the disk.

No. 3 is of a much darker ground colour than No. 1, and closely resembles *maculiferella*, but seems to have a finer, darker, and clearer oblique streak, and the line parallel to the hind margin seems a little more curved than in that species. It is also much clouded, with dark grey each side of the pale line. This form Mr. Threlfall writes me he has bred, and that it has been named *semidecandriella*.

No. 4, an almost unicolorous, blackish (in one specimen quite black) form, with the oblique streak and dot on disk almost lost in the ground colour, the pale line hardly perceptible, and slightly paler on the inner margin.

Between the very pale and black forms I have *almost* every intermediate grade. I say *almost*, because there are none directly intermediate between 3 and 4; and my own series of some eighty specimens I have divided into seven groups, as follows:—

No. 1.—As described above, = *junctella*, Sta. Man.

„ 1a.—Intermediate between 1 and 2. This form Mr. Coverdale named for me as *knaggsiella*.

No. 2.—As described.

„ 2*a*.—Intermediate between 2 and 3.

No. 3.—As described, = *semidecandriella*.

No. 4.—As described above.

„ 4*a*.—The black specimen mentioned in description of No. 4.

These specimens vary in size. None are larger than *marmorea*, but some are much smaller in each group, except No. 4, the specimens of which are very uniform in size.

No. 1 seems to agree fairly well with *junctella*, Stainton's *Man.* vol. ii. p. 339, although I should hardly say my specimens had a "reddish brown" blotch. Do any of my forms agree with the original description of *knaggsiella*? I cannot find anything about this insect, and cannot help feeling that if Mr. Coverdale is right in his naming of No. 1*a*, that, at any rate, the *Gelechia junctella* of the 'Manual,' *knaggsiella* and *semidecandriella* will all turn out forms of one exceedingly variable species. At present I am rather in the dark; and if any of our older entomologists could give me a correctly-named British or continental type of either *junctella*, *knaggsiella*, *leucomelanella*, or *vicinella* for reference, I should be exceedingly obliged. One thing seems certain,—if No. 1 (*junctella*), No. 1*a* (*knaggsiella*), and No. 3 (*semidecandriella*) are distinct species, then I have at least seven distinct species in my series, for there is quite as much difference in the other groups as in these.

I should not be surprised if No. 4 was a novelty, I have no direct connecting links between Nos. 3 and 4; it is constant in size; but the taking it at same time with the other forms, and its general appearance, have led me to the belief (perhaps erroneous) that they are all one species. That Nos. 1, 1*a*, 2, 2*a*, and 3 are either one species or else five distinct ones, I firmly believe, because only the smallest points of difference can be detected, such as ground colour, partial obliteration of a line, &c.; and if the differences between any two of the forms is sufficient for specific rank, so are the differences between the others. I see in Staudinger and Wocke's Catalogue, "No. 1961, *pulla*, Tgstr. Bidr. 126." Would the description of this agree with my No. 4? which would form a very good connecting link between *maculiferella* and *junctella*, the place assigned it in the list. I see, too, in this list, that between *knaggsiella* and *maculiferella*, &c., are

the species *maculea*, *fraternella*, *viscariella*, *tricolorella*, *costella*, and a continental species *hyoscyamella*. This seems to me another illustration of what Mr. C. A. Briggs says (Entom. xviii. 130), "Crammed in apparently to interpose a scientific frontier between two species so often mixed." "So little known" would do better in this case than "so often mixed."

I see, as localities for *knaggsiella*, Dr. Wocke says—"Germany; ? Anglia." What does the "?" mean? Does it mean that Anglia is a doubtful locality? If so, whence were the original specimens derived from which the species was named? for the same author says, "*knaggsiella*, St. Ann. 1866, 167." Were the original specimens British, as they bear Mr. Stainton's name?

This is a puzzling group, but the different species(?) are nearly all British; and if notes were compared from the different parts of our coast a correct result might, I think, easily be obtained.

Any information that can be given me, either by letter or in the pages of the 'Entomologist' (the latter preferred, as it might help some Micro-lepidopterist), on this group, will be gratefully received. Surely there must be some British entomologists who can give their younger brethren some information on these, to us, knotty points; or are the older entomologists as much in the dark as we are? If so, perhaps the above is a problem worth working out.

Rayleigh Villa, Westcombe Park, Blackheath, January, 1887.

ON THE TORTRICES OF CROYDON AND DISTRICT.

BY W. G. SHELDON.

DURING the past season I devoted some time to working up this group; and as Croydon is one of the most accessible localities from London, a few notes from my diary may not be unacceptable to some of your readers who are commencing to study this interesting division. Omitting many species of universal occurrence, I may mention the following:—

Tortrix forsterana, a specimen being netted in my garden, I instituted a search amongst ivy in the neighbourhood, and found the empty pupa-cases tolerably common, but was too late for tenanted ones.

Peronea logiana (*tristana*), a few larvæ on guelder rose (*Viburnum lantana*) at Purley. *P. aspersana*, one female only, Riddlesdown.

Dictyopteryx holmiana, a series from whitethorn. *D. forskaleana*, swarming in June, amongst maple (*Acer campestre*), on Riddlesdown.

Argyrotoxa conwayana, generally distributed, and common amongst privet (*Ligustrum vulgare*).

Penthina betulatana, common amongst birch. *P. capreaana*, several bred from shoots of willow, West Wickham. *P. gentiana*, larvæ common in a chalk-pit at South Croydon, feeding in seed-heads of teasel (*Dipsacus sylvestris*).

Spilonota rosæcolana, larvæ in cultivated roses in the garden.

Aspis ulmanniana, the singular bunches formed by the larvæ of this species were common on bramble.

Sericoris cespitana: this, usually a common species on Riddlesdown, was this year scarce in that locality.

Eriopsela fractifasciana, not uncommon on Riddlesdown, end of April; the August brood not so plentiful.

Cnephasia politana, very common on Shirley Heath in April and May, flying in the afternoon sunshine. Several specimens were also observed in August; these were presumably a second brood, as they were considerably smaller than those taken in the spring.

Sciaphila hybridana, common in all laues in June, flying in the afternoon.

Phoxopteryx comptana, common on Riddlesdown in April, and again in August. *P. derasana*, not rare in hedges near Riddlesdown. *P. mitterpacheriana*, common in oak woods, generally.

Grapholitha ramella, *Phlæodes tetraquetra*, and *Pædisca bilunana*, all common amongst birch at West Wickham. *P. ratzeburgiana*, three specimens were taken from spruce fir in a wood at Addington. *P. solandriana*, common generally.

Ephippiphora pflugiana, larvæ common generally in stems of thistles. These larvæ were of two forms,—one with bright red dorsal area, the other slightly smaller and yellowish white in colour. I concluded these last were the nearly-allied *E. cirsiana*, but soon found them to be the same species as the others; the fact of their being ichneumonized specimens accounted for difference in size and colour. *E. fenella*, larvæ very common in roots of mugwort (*Artemisia vulgaris*); the imagines bred varied much in colour. *E. nigricostana*, larvæ common locally in stems of hedge woundwort (*Stachys sylvatica*).

Semasia rufillana, larvæ very common about Caterham Junction in seed-heads of wild carrot (*Daucus carota*). *S. spiniana*, not common in August, flying in afternoon sunshine.

Coccyx splendidulana, a solitary specimen bred from a large number of oak-galls collected during the winter; this was the only lepidopteron that

emerged from them. *C. argyrea*, common on oak trunks in April. *C. tedella* (*hyrciniana*), swarming amongst spruce throughout the district in June. *C. nanana*, common amongst spruce at West Wickham in July.

Heusimene fimbriana, not uncommon in oak woods in March and April.

Pectinia buolianae, larvæ common in young shoots of Scotch fir in May.

R. turionana, pupæ not uncommon in shoots of Scotch fir at West Wickham, April 21st. A shoot containing a pupa does not start growing in the spring, and can thus be easily distinguished from a healthy one.

Carpocapsa splendidana, larvæ very common in acorns last autumn at Croyhamhurst.

Stigmonota roseticolana, generally distributed; larvæ not uncommon in fruit of wild rose.

Dicrorampha politana, local amongst yarrow (*Achillea millefolium*); larvæ feeding in roots. *D. petiverella*, common everywhere amongst food-plant; of same habits as last. *D. simpliciana*, not uncommon wherever its food-plant (*Artemisia vulgaris*) occurs; a series was bred from the roots.

Pyrodes rheediella, a few specimens taken flying over flowers of whitethorn.

Catoptria hypericana, common everywhere amongst St. John's wort (*Hypericum*). *C. cæcimaculana*, local on chalk amongst *Centaurea nigra*.

Trycheris aurana (*mediana*), Riddlesdown in June, flying in sunshine.

Eupæcilia nana, not common in the neighbourhood of birches. *E. dubitana*, local amongst ragwort; larvæ in heads. *E. hybridella* (*hybridellana*), Riddlesdown; one specimen. *E. angustana*, swarming early in August on Shirley Hills. *E. roseana*, larvæ common in seed-heads of teasel.

Xanthosetia zœgana, somewhat local, but common where it occurred.

Chrosis alcella (*tesserana*), Riddlesdown, common. *C. rutilana*; although I diligently worked for this species on several occasions amongst its haunts at Riddlesdown, I was only successful in securing one specimen.

Argyroplepia badiana: what I presume to be the larva of this species was very common in the seed-heads of burdock (*Arcium lappa*) during September. In common with many another entomologist, I have searched long and diligently in the roots and stem for this larva (following the advice of the standard works on the subject), with of course no success.

Conchylis dilucidana; the larvæ of this species were exceedingly common in the stems of wild parsnip (*Pastinaca sativa*) in winter and spring.

Aphelia osseana, not uncommon in August on the chalk downs of the district.

Rose Cottage, Oval Road, Addiscombe, Surrey, Dec. 30, 1886.

ENTOM.—FEB., 1887.

F

NOTES ON *CECIDOMYIDÆ* DURING 1886.

BY PETER INCHBALD, F.L.S., F.E.S.

THE following notes are upon my year's work among the Gall-gnats during 1886:—

My first Cecid of the year appeared on the morning of April 6th, and was *Cecidomyia betulæ*, from the seed-catkins of the birch. They appeared throughout the month of April, fully 100 emerging in my glass-topped box on the 18th of the month. There was a large preponderance of females beyond what I have noticed in other species that I have yet bred. Franz Loew was the first, I believe, to trace the home of the larva to the seed-capsules of the birch, which it modifies to its special needs and requirements. Sometimes two pupæ lie side by side in the capsule.

Cecidomyia cardaminis, Winnertz, was the next to put in an appearance on April 19th. I bred it from *Cardamine amara* far more abundantly than from *C. pratensis*. I have never bred it from *C. hirsuta*. Its larval home is readily noticed, the flower-heads being made to assume monstrous proportions. I would observe that the colouring of the heads of *C. amara* are even deeper purple than those of *C. pratensis*. All the parts of the flower are utilised by the larva in its economy.

Throughout the month of May the "Knot-grass Cecids," *C. persicariæ*, Linn., hatched abundantly from their snow-white cocoons. I bred it from *Polygonum amphibium*, though on the Continent it also affects *P. persicaria*. Though the two grow together,—often side by side,—I have never seen the larvæ on *P. persicaria*. I bred the gall-gnats very abundantly, both male and female. Sometimes the bell-glass was covered with them. Winnertz tells us that he reared only the females; with me the numbers were nearly equal. The antennæ of the males are stalked, consisting of fourteen joints; in the females the joints are beaded, but not stalked.

Cecidomyia muricatæ, n. sp. (mihi), began to issue from the seed-spikes of *Carex muricata* on May 16th, at first sparingly, but during the month fairly abundantly. I gathered the affected heads in July of last year. The larvæ fed within the utricle on the embryo nucule, pupating in the spikelet. I bred both the

males and females in nearly equal numbers. (For a detailed account see Entom. xix. 152.)

Cecidomyia urticæ, Perris (Nettle Gall-gnat), put in an appearance this year for the first time on May 26th. The galled heads were gathered Sept. 18th of the previous year. The larvæ are common, affecting the leaf-stalk and ribs of the leaves of the nettle. When full-fed they fall to the ground, and pupate in the soil, spinning a snow-white silken little web. Their colour is greenish white, not red as *Cecid* larvæ usually are. I bred both sexes in fair abundance.

Cecidomyia salicis, Schrk., issued from multilocular bosses on the upper twigs of *Salix cinerea* on June 6th. It is many years since I previously bred it,—in 1861,—according to Mr. E. A. Fitch's admirable 'Synopsis' (which I would ask him to supplement, on the very same principle). The woody excrescence yielded me upwards of a score gall-gnats of both sexes.

Cecidomyia cratægi, Winnertz. — The leafy bosses at the tips of the shoots of the hawthorn of our trim-kept hedgerows yielded me from June 13th quite a bevy of this gall-gnat; and no wonder, as I have counted upwards of a dozen larvæ in some of the larger bosses.

I received on June 13th, from Sussex, the larvæ of *Cecidomyia nigra*, Winnertz, that affects the core of young pears, consuming the pulp. I found them, on cutting open the baby pear, ensconced in the centre, whence blackened tunnels emanated. Mr. Bloomfield, of Guestling, who sent me the young pears, remarked that they had selected the "Marie Louise" pear as their nurse. By July 6th all had left the pears, and pupated in the soil of the flower-pot below the bell-glass. The larvæ is yellowish white. The pupa spins for itself a papery cocoon, which is exteriorly enclosed in an earthen case. Some of its life-history is thus read, and we must hope to read the remainder when the pear-tree puts forth its bloom in the spring. Mr. Bloomfield further says:—"The fly (*Cecidomyia nigra*) has not been reared of late years, and is so incompletely described that it is not known to which division of the group it belongs." We may, I trust, hope to unravel a something further of its life-history.

On July 10th I gathered the gall-like processes of *Cecidomyia galii*, H. Loew, from the stems of *Galium verum* (yellow bedstraw). I may remark that I have often tried to rear this species in other

years, but unsuccessfully hitherto. The metamorphosis is performed under the ground. The gall splits to give exit to the grub, which worms its way into the soil. The larva is yellowish red; the imago is described, by those who have been fortunate enough to rear it, as dingy yellow. On the Continent, according to Kaltenbach, the gnat affects *G. mollugo* and *G. uliginosum*, as well as *G. verum*.

Cecidomyia clausilia, Bouché, began to emerge from the marginal pads on the leaves of *Salix alba* on Aug. 5th, and continued to emerge till fully the middle of the month. This species, though its home is figured by Bremi, was never reared by him; indeed, the *rolled leaves* were regarded as the work of a *Phytoptus* by later writers. Bremi figured the nidus of the gnat in 1847; it appeared in the 'Transactions of the Swiss Natural History Society.' The home of a near ally of *clausilia*, viz., *C. marginem-torquens*, is figured by Bremi on the same plate. This he reared in the summer, he says, in fair abundance. Like *clausilia*, it also pupated within the curl, though in the former the rolled-in edge was *continuous*, in the latter *interrupted*. I must have reared (Aug. 5th) fifty examples of *clausilia* from the affected leaves I gathered.

On August 28th I noticed the swollen buds of *Rumex acetosella*, the home of *C. rumicis*, H. Loew. On being brought into the house the larvæ escaped from the buds; further observation with a lens revealed tiny white cocoons in each flower-bud. Dr. Trail, of Aberdeen, says the "Cecids are very easily reared from them."

Fulwith Grange, near Harrogate, December 22, 1886.

ON BREEDING VARIETIES OF *ANGERONA PRUNARIA*.

BY GEO. J. GRAPES.

SINCE writing the last notes on this subject (Entom. xix. 302) I have ascertained that the larvæ given by me to a friend in March, 1885, produced some pretty banded forms, including instances in which the wings of the male were crossed with yellow, instead of the usual orange bands. This seems unaccountable, considering that the parents were typical male and

female and not varieties, and affords further evidence, if such were needed, of the variable nature of *prunaria*; also what anomalous forms are likely to result from long and continuous experiments with this moth. The larvæ I received from the same friend in the autumn of 1885 were from the progeny of an ordinary male and an ordinary variety of the female, which progeny he informed me comprised as many varieties as types, a notable peculiarity with the banded forms being that in the majority of cases the bands were much interrupted, extremely so in some instances. The perfect insects resulting from the larvæ given me were three ordinary males, eight ordinary females, five speckled variety males, and three banded variety males,—total, nineteen; the greatest proportion proving typical forms. Viewing the result, however, as regards the effect of sex on offspring, it will be seen that three only were types of the male and none of the female parent, the effect generally being that the male varieties resembled the female, and the typical females the male parent; but this cannot be considered a fair criterion, as the remnant of the larvæ, about thirty, died during hybernation.

I would observe that during the whole course of these experiments the males were more numerous than the females. The numerical superiority of the male is doubtless of frequent occurrence, and probably the rule with lepidopterous insects.

In continuing these experimental crossings, I propose to note carefully which sex in the parent the progeny most resemble, as well as which sex most preponderates, as it is only by repeated experiments and exactness of detail that reliable data can be gained on which to base an opinion of any scientific value on the subject of hereditary descent in insects.

The foregoing remarks comprise all that is worth recording concerning my experiments with *A. prunaria* to the present time, unless the following description of the principal characteristics of the female aberrant forms, referred to in my first notice (Entom. xviii. 253), may be deemed of interest, *viz.*,—First example:—Colour of wings rich dark brown, with bright yellow transverse central bands; ordinary yellow spot at tip of fore wings, replaced by a minute indistinct yellow dot; no yellow markings near apex or tip of hind wings, and but few on cilia of wings, lunated, scalloped, or otherwise; central transverse discoidal streaks sharply and clearly defined. Second example:—Same as first,

except that wings are of lighter brown, and yellow spot at tip of fore wings merges into an irregularly defined band parallel to hind margin, and tapering to its junction with inner margin at hinder angle. Third example:—Same as second, except that transverse bands are very much broader, and yellow spots near tip of fore wings do not merge into fascia. The remaining aberrations are not sufficiently conspicuous to merit description.

2, Buckleigh Road, Streatham Common, S.W., Jan. 21, 1887.

THE GENERIC POSITION OF *GRAPHOLITHA* (?) *CÆCANA*.

By W. WARREN, F.E.S.

I VENTURE to offer a few remarks on the question pertinently asked by Mr. Tutt (Entom. 13). It seems to me that if good specimens of *cæcana* be placed side by side with examples of *Stigmonota dorsana* and *S. orobana*, and the markings carefully compared, there need not remain much doubt about the proper position of the former. The particular prominence and direction of the lustrous line produced from the third gemination, that which immediately follows the central fascia, is noticeable in each of them. This line runs first obliquely from the costa towards the centre, and then suddenly perpendicularly to the inner margin before the anal angle, where it is somewhat dilated. The regular alternation of light geminations and darker intervals all along the costa is observable likewise in all three species. But more than this: in three of the specimens of *cæcana* now before me,—faintly seen in two, but quite visible in the third,—there appears above the inner margin, exactly in the position in which it occurs in *S. dorsana* and *S. orobana*, the curved end of a lunular mark, in this case not lighter than the ground colour, but visibly margined with darker; and the margins are more or less distinctly produced to the inner margin, forming the lower arm of the (usual) pale fascia, which separates the basal patch from the central fascia.

So much for the markings of the imago. I agree, however, with Mr. Tutt, that the larval habits are of equal, I would even say of greater, importance than any number of points of resemblance in the markings of the imago, when it is wished to

determine the most *natural* position of an insect. Of the two insects between which Mr. Tutt now proposes, provisionally only, to place it, *Catoptria hypericana* is certainly a spring feeder, while *C. ulicetana* has at least two, if not three, broods a year, and hibernates as pupa. *S. dorsana* and *S. orobana* feed up in the seeds of vetches, the contents of a single pod furnishing them with a sufficiency. As full-fed larvæ they emerge from the pod, and spin a papery cocoon among rubbish on the ground, in which they pass the winter, and pupate shortly before their time of emergence. The habits of the feeding larva of *cæcana* must of necessity be somewhat modified. The pod of *Onobrychis sativa* is very different from that of a vetch.

Probably, in its earlier stages, the larva of *cæcana* feeds on the seed, and this not sufficing for it, afterwards betakes itself to the stems of the food-plant, in which, apparently, it goes on feeding through the winter, a habit in which, as far as I know, no one of its nearest allies indulges. At all events, as being an autumnal and internal feeder, I should be disposed to assign it a position nearer to the insects mentioned than to *C. hypericana* and *C. ulicetana*. Of genera I say not a word, the natural subdivision of the unwieldy genus *Grapholitha*, Ld., being yet *in nubibus*.

Merton Cottage, Cambridge, January, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN THE ISLE OF WIGHT.—I have a butterfly, taken at Shanklin, I.W., which I believe is unknown to British collectors. Not mentioned in Newman's, or Colman's, or Morris's, or Wood's works on Entomology. The insect measures at least four inches and a half across, is of a bright Vandyke brown with black markings, similar to black-veined white (*Aporia crategi*), and has a white and spotted black edge to each wing, with deep black line on inner margin; body is black, with white spots on thorax. Is in splendid condition, seemingly fresh from chrysalis.—J. A. BILLINGS ('Hampshire Independent,' December 18, 1886). [It was in 1876 that the Rev. Thomas E. Crallan gave me a drawing, which his daughter had made, of the first recorded specimen of *Anosia plexippus* taken in England, *vide* 'Entomologist,' 1876, pp. 265-7. Mr. Crallan then referred to

the rumours of the appearance of an unusual butterfly in that neighbourhood for some two or three years. I ventured to suggest that the insect might establish itself in this country; and now that it has been taken in the Isle of Wight, in each of the southern counties, and one western, such appears to be the case.—J. JENNER WEIR; January 7, 1887.]

COLIAS EDUSA IN ESSEX.—It may perhaps be as well to record the occurrence of *Colias edusa* in the neighbourhood of Rainham, Essex, on August 20th last, when I observed at least four specimens on the wing in this locality. Not being provided with a butterfly-net, I restrained my natural impulse to capture this old favourite, and contented myself with viewing their beauty whilst flitting hither and thither close by me. The sun during the afternoon was shining intensely, and butterflies, particularly of the commoner species, seemed fairly numerous; indeed more so than I had noticed at any other time during the season.—G. A. LEWCOCK; 40, Oxford Road, Islington, N.

LYCÆNA ICARUS, HERMAPHRODITE(?).—I took on the Landslip, Ventnor, Isle of Wight, 12th August, 1886, a peculiar hermaphrodite of *Lycæna icarus*. The wings of ordinary pale blue of male, on the right side of which the deep brown and orange spots of female is partly developed, and also on the left side, but not to so great a degree.—MALCOLME CAMERON; 102, Clarence Road, Clapton, E., January 12, 1887.

HYBRID LYCÆNIDÆ: CORRECTION.—In the report of the South London Entomological and Natural History Society, October 7th, 1886 (Entom. xix. 286), it is stated that the insects I took in copulation were *Lycæna bellargus* and *L. icarus*. This was not what I wished to convey when exhibiting them. The species I mentioned were *L. bellargus* and *L. corydon*, and my opinion was, and is, that the varieties exhibited by me are hybrids between these species, or else between *L. bellargus* and *L. icarus*. Mr. Weir inclined to the latter view, he having seen a specimen of *Lycæna bellargus* and *L. icarus* together at another locality last season.—E. SABINE; 22, The Villas, Erith, Jan. 12.

PIERIS RAPÆ IN JANUARY.—I found a perfect specimen of *Pieris rapæ* just emerged from chrysalis. Is it not very early? —R. B. ROBERTSON; New Lodge, Hartley, January 17, 1887.

PÆCILOCAMPA POPULI AT CHESTER.—This insect was common last November at Chester. It should be sought for in the evening, both at rest and on the wing, at gas-lamps, where trees and woods are near. As the moth seems to rest exclusively on the ribs of the lamps it is necessary to use a ladder and lantern.—J. ARKLE; 2, George Street, Chester.

THE HABITS OF TRIPHENA INTERJECTA.—My friend, the Rev. Cyril D. Ash, has sent me the following interesting note on the habits of *Triphena interjecta*. He writes:—"I was surprised the other day in July to see this insect flying in the hottest sunshine about 4 p.m., in a lane near here (Newport Pagnell, Buckinghamshire). I had no net with me at the time. At first I could not make out what the insects were, as I could see enough of the yellow colour of the hind wings to know that they were not *Plusia gamma*; but at last one settled for a moment, and I saw what it was. The next day I went again to the same place, thinking that possibly the occurrence might have been accidental. Nothing was visible at first; but at 4 p.m. out they came again, and I captured one. The others flew so wildly, and the banks were so infested with bramble, that this was all I got. In about half an hour most of them had disappeared."—JOSEPH ANDERSON, jun.; Chichester.

[This habit of *T. interjecta* is known to many entomologists.—ED.]

VENILIA MACULARIA, VARIETY.—Last summer I took a long series of this insect on the outskirts of a wood in this parish. All the specimens I captured were evidently very fresh and in good condition. Amongst them I found some half-dozen to vary from the normal type. The variation in each insect was the same, *viz.*, the upper wings of a light orange, the hind wings of the usual shade of the same colour. Is this a distinct variety? It would seem to be, from the constancy of the variation.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, January, 1887.

EARLY APPEARANCE OF PHIGALIA PEDARIA (PILOSARIA).—My cousin, Mr. F. Ballard, took a specimen of *P. pedaria (pilosaria)* from a shop window on November 30th, and I hear of another collector taking a specimen during the second week in December; such occurrences appear to me exceptionally early.—A. J. WINDYBANK; Ashdown Road, Kingston.

CHRYSOCLYSTA BIMACULELLA AND GELECHIA OSSEELLA IN NORTH KENT.—I have to record the occurrence of two rare species of Tineina, which I captured in North Kent in July last (1886), viz., *Chrysoclysta bimaculella* and *Gelechia osseella*, both beaten out of sallow. This makes the second specimen of the latter insect I have captured, the first being in 1885, as recorded (Entom. xix. 256). Has *C. bimaculella* ever been bred? Mr. Hodgkinson (Entom. xix. 246) seems to suggest that *Epilobium* (willow-herb) is the probable food-plant, although all the recorded examples of the insect seem to have been captured among sallow.—J. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., Jan., 1887.

LEPIDOPTERA AT SHEFFIELD DURING 1886.—I am ignorant what the past season has been like in other districts, but here it has been most unsatisfactory. The late Mr. Henry Willits told me that, although he had collected in this neighbourhood for upwards of half a century, he never experienced anything like the total absence of really good insects as during the present season. The smoke which pollutes Sheffield must have a great effect on the insect fauna and flora, as Lepidoptera which used formerly to be plentiful have utterly disappeared before the rapid increase which our factories are making on every side of this town.—A. E. HALL; Norbury, Pitsmoor, Sheffield, Nov., 1886.

LEPIDOPTERA IN SOMERSET.—On the whole I have no reason to complain of the season of 1886. *Psilura monacha* came in my way for the first time in my experience on September 7th. My son caught *Pterostoma palpina* in a warehouse at Yeovil on June 19th. *Dasypolia templi* came to my gas-lamp on October 30th. *Platyptilia gonodactyla* occurred on September 1st; *Crambus selasellus* on August 26th; *Trycheris aurana* on June 26th; *Diurnea fagella* (abundant) on April 23rd; *Hyponomeuta padellus* on August 17th; *Butalis fusco-ænea* on May 30th. All the above are new to my list. Most would probably have been found years before if I had sought in the proper places at the right time; and I should add that I am quite a beginner at the Micros. Many common species were very scarce during the past season, some failing to put in an appearance at all. A few others I found particularly abundant, the most remarkable perhaps being *Alucita hexadactyla*, which seemed to be constantly turning up from April to November.—W. MACMILLAN; Castle Cary.

LARVA IN ORANGE.—I have a larva feeding in an orange, quite in the heart. I hope to breed it. It is pinkish white, with brown head, and black steel-looking collar on the 2nd segment, and black legs. It is a very fast feeder, as it ate into the heart of a fresh orange in twenty-four hours, beginning at the top of the pith, and making quite a cavity in the centre among the pips. After opening the second orange to find if it was inside, I had to give it a fresh one, which it soon entered; but it took the precaution to web over the orifice of its retreat in the last orange, and there it still remains.—C. J. BODEN; 228, Bermondsey Street, London, S.E., January, 1887.

PRESERVATION OF LEPIDOPTERA.—Will any of your readers kindly give me their opinion of corrosive sublimate as a preservative, and also the best way to make it, ingredients, exact quantities, and where to get them? I also should like to know if methylated spirit answers the purpose of the alcohol referred to by Waterton, in his 'Wanderings in South America,' and if it is necessary to entirely immerse the insects in the solution, or merely paint their bodies with a camel-hair brush.—WALTER DANNATT; Ivy Dene, Westcombe Park, Blackheath, S.E.

[For preserving Lepidoptera from the depredations of mites, &c., naphthaline has frequently been recommended, *vide* Entom. 1882 and 1885.—R. S.].

MALPOSITION OF IMAGO IN PUPA-CASE.—A few days ago, while opening some pupæ which had failed to emerge, I came across one of *Lophopteryx camelina*, in which the head of the imago was towards the tail of the pupa-case, and the moth had laid some eggs within the pupa-case; the dorsal surface of the imago was towards the ventral surface of the pupa-case; and I find that this was also the case in one of the pupæ of *Asphalia flavicornis*, previously recorded. In the other the imago was placed laterally, as regards the pupa-case.—W. R. BUCKELL; Romsey, Hants.

CAPTURES AT CHISWICK.—During the past year several new forms have been added to the local list for Bedford Park, and some of them are interesting. These species of Neuroptera have been identified by Mr. McLachlan: *Leptocerus dissimilis*, Steph., found on a leaf of *Phaseolus multiflorus*, and two mayflies, *Cloëon dipterum*, L., and an immature form, perhaps *C. simile*,

Eaton. In the Hymenoptera we have added *Chelostoma campanularum*, Kirb., one found on a flower of *Epilobium hirsutum*; *Homalus aurata*, L., a species superficially resembling *Chrysis ignita*, but much rarer in the district; *Fænus jaculator*, L., one specimen only, on a thistle, and several other species. *Vanessa io*, *Gortyna ochracea*, *Hadena trifolii*, *Amphipyra tragopogonis*, *Eupithecia rectangulata*, var. *nigrosericeata*, and others have been added to the list of Lepidoptera. The list of Diptera now includes *Tipula lunata*, *T. oleracea*, *Scatophaga stercoraria*, *S. merdaria*, *Calliphora vomitoria*, *Lucilia caesar*, *Musca domestica*, *Pollenia rudis*, *Dexia lateralis*, Panz., a species allied to *maura*, Fab., but not identical; the British Museum collection does not contain this species, and I have failed to identify it up to the present; one specimen was taken on a gate. *Eristalis tenax*, *Anthomyia pluvialis*, *Triennia errans*, *Chrysomyia formosa*, *C. polita*, *Beris rallata*, *Syrphus corollæ*, *Sarcophaga albiceps*, *Heteromyza nervosa*, *Sapromyza palloptera*, and *Empis livida*. *Hylotrupes bajulus* is the most interesting addition to the Coleoptera.—T. D. A. COCKERELL; 5, Priory Road, Bedford Park, Chiswick, Dec. 8.

SIREX JUVENCUS.—A specimen of *Sirex juvencus* was taken in an ironmonger's store-room here about the middle of September. It was somewhat worn and shabby-looking. It is rather remarkable that almost every year several *Sirex gigas* are found in another ironmonger's shop in this city.—JOSEPH ANDERSON, jun.; Alre Villa, Chichester.

CALANDRA PALMARUM IN SOUTH WALES.—On the 18th July, 1886, my friend caught a single specimen of *C. palmarum* in Pembroke Dock, Wales. It is supposed that it must have been imported in some American cargo.—A. J. FIELD; 145, Isledon Road, Seven Sisters' Road, Finsbury Park, N., January, 1887.

THE STAG-BEETLE (LUCANUS CERVUS) IN THE MIDLANDS.—This handsome beetle used to occur years ago in one locality in the Midlands between Wyre Forest and Stourport, in Worcestershire. Dr. J. W. Williams informs me that he used to take it in abundance in this spot. Can anyone inform me whether it is taken there still? and whether it occurs in any other locality in the Midlands? because it is my impression that this is the most northern locality for the beetle in the country. The Valley of the Severn possesses a high average temperature, which may probably

assist us to account for the occurrence of this Austral species so far north.—W. HARCOURT BATH; Birmingham.

ERRATA.—Page 14, line 9 from top, for "*undana*" read "*mediana*." Page 16, line 13 from top, for "A. Dorritt" read "A. Drnutt." Page 19, lines 4 and 27 from top, for "Wolamore" read "Dolamore"; line 16 from top, for "*subreptus*, Tst.," read "*obreptans*, Fst."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *Fifty-fourth Anniversary Meeting, January 19th, 1887.*—Robert M'Lachlan, Esq., F.R.S., President in the Chair.

An Abstract of the Treasurer's Accounts, showing a large Balance in the Society's favour, was read by Mr. Stainton, one of the Auditors; and the Secretary read the Report of the Council.

The following gentlemen were elected as Officers and Council for 1887:—*President*, Dr. David Sharp, F.Z.S.; *Treasurer*, Mr. Edward Saunders, F.L.S.; *Secretaries*, Mr. Herbert Goss, F.L.S., and the Rev. W. W. Fowler, M.A., F.L.S.; *Librarian*, Mr. Ferdinand Grut, F.L.S.; and as other Members of Council, Messrs. Robert M'Lachlan, F.R.S.; Gervase Mathew, R.N., F.L.S.; George T. Porritt, F.L.S.; Edward B. Poulton, M.A., F.G.S.; Osbert Salvin, M.A., F.R.S.; Henry T. Stainton, F.R.S.; Samuel Stevens, F.L.S.; and J. Jenner Weir, F.L.S., F.Z.S.

The retiring President delivered an address, for which a vote of thanks to him was moved by Mr. E. B. Poulton, seconded by Prof. Meldola, and carried unanimously.

A vote of thanks to the Treasurer, Secretaries, and Librarian was moved by Mr. M'Lachlan, seconded by Mr. Stainton, and carried, and Mr. Goss and Mr. Grut replied. A vote of thanks to the Council was proposed by Mr. Waterhouse, seconded by Mr. White, and carried.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 13th, 1887.* R. Adkin, Esq., F.E.S., President, in the chair.—Mr. R. Frere was elected a member. Mr. Adye exhibited *Dasycampa rubiginea* and *Acherontia atropos*, both taken at Christchurch, 1885, *Cossus ligniperda* and *Boarmia roboraria* from the New Forest, and *Saturnia pavonia* from

Bournemouth. Mr. J. A. Clark, varieties of *Hybernia defoliaria*, taken during the first week in December; also a male specimen of *H. aurantiaria*, in cop. with a female of *H. defoliaria*, from which he stated he had obtained ova. Mr. E. Joy, a variety of *Lycena corydon*, similar to the first figure in plate I. of the present volume of the 'Entomologist.' Mr. Goldthwaite, *H. aurantiaria* and *H. defoliaria*. Dr. Rendall, *Ino globulariæ*, *I. statice* and *I. geryon* from Lewes; *Agrotis cursoria* and *Eucosmia undulata*, and called attention to the tufts in the inner margin of the hind wings of the last-named species. Mr. Billups, a species of Coleoptera, *Brachycerus imperialis*, L., and contributed notes. The President read his Annual Address.—H. W. BARKER, *Hon. Sec.*

REVIEWS.

List of the Macro-Lepidoptera of East Sussex. Lewes, 1886.

By and of J. H. A. JENNER, F.E.S.

THE compiler is to be congratulated upon the locality of his researches, for no portion of the British Isles offers a more excellent opportunity for the study of the Lepidoptera of our country. The varied configuration of the county under consideration may be gathered from a sentence in the introduction, with which Mr. Jenner prefaces his list, *viz.*, "Its downs, marshes, extensive woods and forests, and its sea coast." It is much to be regretted that Mr. Jenner has not seen his way to extend his record to the Micro-Lepidoptera of South-east Sussex in the one publication. We must, however, hope that a list of the Micros will shortly follow.

Mr. Jenner has very properly divided his district by its catchment basins, five in number. They are named as follows:—Adur (part of), Ouse, Cuckmere, East Rother, and Medway. The following is a list of species in different groups taken therein:—Rhopalocera, 55; Sphinges, 30; Bombyces, 91; Noctuæ, 234; Geometræ, 217—Total, 627, as against a possible 818 as given in the 'Entomologist' list of Macro-Lepidoptera. He adds also seven casual or accidental species which have been recorded from his division.

In his preface, Mr. Jenner apologises for the limited extent to which the district has been worked by entomologists. Consi-

dering its accessibility from London and the beauty of its scenery, it does seem extraordinary that more workers have not appeared upon the scene. This can only be accounted for by the custom obtaining among the bulk of collectors of working in one groove, visiting the same localities season after season, instead of striking out for themselves new hunting-grounds, unless "personally conducted." This list will, we hope, draw attention to the eastern half of Sussex, and induce further exploration.—
J. T. C.

The Cockroach: an Introduction to the Study of Insects. By Prof. L. C. MIALl and ALFRED DENNY. 1886. London: Lovell Reeve & Co. Leeds: Richard Jackson.

THIS work is the third of a series of 'Studies in Comparative Anatomy' by Professor Miall, or jointly by him and collaborators, the two previous ones being upon the 'Skull of the Crocodile' and the 'Anatomy of the Indian Elephant.' No doubt these books will find ready sale among a class of readers who like to obtain their knowledge in as simple form as possible. The one just issued upon the Cockroach treats in popular language of the structure and life-history of *Periplaneta orientalis* and its allies. The volume is liberally illustrated by drawings, some one hundred and twenty-five in number.

The type followed is Professor Huxley's well-known textbook for biologists, 'The Crayfish'; but although that type is fairly imitated, 'The Cockroach' falls short of the model in originality. The authors confess in their preface that some of the figures have already appeared in five articles upon the subject, which appeared in 'Science Gossip' a couple of years previously. We think we may take it for granted that some of the substance of this work also appeared at the same time, for its whole tone is somewhat gossipy, where collation has not been resorted to. Thus, much of the contents of the work under notice has already appeared elsewhere, and in some instances long ago. There can be no possible objection to this style of book-making, for it must greatly tend to a popularity of the study of the structure of various animals, though we doubt if it will make the authors' friends, the Cockroaches, more popular.

The work is divided into eleven chapters and an appendix. The chapters are—I., upon "Writings on Insect Anatomy";

II. and III., upon the "Zoological Position and Natural History of the Cockroach"; IV. and V., upon the "Outer Skeleton, Muscles, &c."; VI., VII., and VIII., the "Nervous, Digestive, and Respiratory Organs"; IX. and X., upon "Reproduction and Development"; and Chapter XI. is upon the "Cockroach of the Past," written by Mr. S. H. Scudder, of the United States Geological Survey. The appendix is divided into the "Parasites of the Cockroach" and the "Sense of Smell in Insects"; both collations.

Of these chapters perhaps the general reader will find most interesting Chap. III., the "Natural History"; and Chap. X., on the "Development of the Cockroach," which latter is by M. Joseph Musbaum, Magister of Zoology, Warsaw.

As examples of the gossipy portion of the work we may quote page 20, *Food and Habits* :—

"As to the food of Cockroaches, we can hardly except any animal or vegetable substance from the long list of their depredations,—bark, leaves, the pith of living cycads, paper, woollen clothes, sugar, cheese, bread, blacking, oil, lemons, ink, flesh, fish, leather, the dead bodies of other cockroaches, their own cast-skins, and empty egg-capsules,—all are greedily consumed. Cucumber, too, they will eat, though it disagrees with them horribly."

Again, on page 26, *Parasites* :—

"We have a long list of parasites which infest the Cockroach. There is a conferva, an amœba, several infusoria, nematoid worms (one of which migrates to and fro between the rat and cockroach), a mite, as well as hymenopterous and coleopterous insects. The cockroach has a still longer array of foes, which include monkeys, hedgehogs, polecats, cats, rats, birds, chameleons, frogs, and wasps; but no single friend, unless those are reckoned friends which are the foes of its foes."

And lastly, on page 27, *Uses*, we find :—

"Of the uses to which Cockroaches have been put we have little to say. They constitute a popular remedy for dropsy in Russia; and both cockroach-tea and cockroach-pills are known in medical practice at Philadelphia. Salted cockroaches are said to have an agreeable flavour, which is apparent in certain popular sauces" !

The authority is not given for the latter statement by the authors.

The work will be found useful to all entomologists; and we shall look forward with interest for the issue of other volumes of the 'Studies in Comparative Anatomy' series.—J. T. C.

THE ENTOMOLOGIST.

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[No. 286.]

NOTES ON THE GENUS *LYCÆNA*.

By RICHARD SOUTH, F.E.S.

(Continued from p. 8.)

IN my last note the variation of *Lycæna corydon* in England was discussed; reference will now be made to some specimens from the continent of Europe, and remarkable forms from Asia Minor.

I have before me short series of the species from Thuringia and Magdeburg in Saxony, the Swiss Alps and the Pyrenees. All are of the normal type on the upper surface, except the Magdeburg males. These last are of a paler blue than usual, and have exceedingly broad blackish hind-marginal borders to all the wings; the costa is also broadly streaked with blackish. Variation in the character of under-side ornamentation, on the same lines as noticed in English specimens, is exhibited by a few examples in the series from the Pyrenees. Thus a male of the obsolete type would fit in well between the Eastbourne specimens, figured, Pl. I., figs. 1, 2; and a female with confluent spots is very similar to the male represented, Pl. I., fig. 6. In this series are also some fine examples of the var. *syngrapha*, Kef., which would be fairly well depicted by fig. 9, Pl. I., if to this figure were added black discoidal spots and a dash of colour along the costa of fore wings, similar in tint to that of the hind-marginal borders.

As previously adverted to, male *corydon*, from widely separated localities in England, differ somewhat in the tone of their blue

upper surfaces, but on the Continent the species varies in this respect to a considerable extent. In Andalusia, for instance, a form of the male occurs which is much larger than the type, and of a whitish colour, shaded with pale grey in certain lights; the bases of all the wings and the thorax have slight traces of the normal blue colour; the dark hind-marginal borders are generally faint, but the ocelli on the posterior wings are clear and distinct. The black chequers are not very conspicuous in the fringes of the fore wings, and still less so, or even absent altogether, in the fringes of the hind wings. Under sides whitish, with a slight tinge of brown on the inferior wings, and the markings have a faded appearance. The female is pale brown, with black discoidal spots set in pale rings; ocelli and orange crescents on the hind margins of all the wings, and some dashes of the male colour internal to the crescents on inferior wings. Under side rather paler than that of normal female, but all the markings clearly defined.

The local form described above is known as *albicans*, H.-S., and between it and the type are two other pale varieties, viz., *appenina*, L., found in Italy, and *hispana*, H.-S., occurring in Northern and Central Spain. Superficially, *albicans* appears to be a distinct species, but independent of the existence of forms connecting it with *corydon*, we have only to regard the character of the under-side ornamentation when its identity stands revealed.

On mountains in Asia Minor a form of *Lycæna* is found, which in every respect but one is, as far as we can judge from its upper and under surfaces, a variety of *corydon*. I refer to *corydonius*, H.-S. This insect is deep blue, or, according to Staudinger, violet-blue in colour. *Caucasica*, Ld., a variety of *corydon*, found in Armenia, is more like *bellargus* in colour, but has the characteristic markings of *corydon* on both surfaces, and corresponds with *L. bellargus* var. *polona*, Z., which occurs on mountains in Asia Minor, and is of the typical colour, but has the hind margins shaded, as in *corydon*. I possess a male specimen sent me as *corydonius*, from Asia Minor, which does not agree, as regards colour, with the description of *corydonius* or yet with *caucasica*. In some lights this insect appears to have faint traces of *bellargus* colour, but its tint is perhaps best described as pale grey with a blue tinge, though this does not

quite convey a correct idea of the remarkable colour of this specimen. From its under-side markings and the ill-defined broad border on upper surface, I should say that it is a variety of *corydon*. A female example from the same locality has discoidal spots set in pale rings on all the wings, and is in other respects identical with certain Ventnor specimens. It is seen, then, that although typical male *corydon* are easily separated from normal male *bellargus*, varieties of the one are not so readily distinguished from varieties of the other. The females, however, do not appear to vary to the same extent as their consorts; but even in our dealings with normal forms, female *corydon* are not always clearly separable from female *bellargus*.

As regards the larva of *corydon*, its distinctness from that of *bellargus* is not well defined. There are several descriptions of the larva of both species available, but Mr. Hellins' differential synopsis is perhaps the most convenient for reference. Whilst engaged in observing and describing the various stages of *bellargus* larvæ, Mr. Hellins had some plants of *Hippocrepis comosa* sent him from Hampshire, upon one of which he found (June 8th) a half-grown larva, which subsequently passed into pupa, and on the 13th of July produced a specimen of *corydon*. Mr. Buckler, who figured this larva and that of *bellargus*, and Mr. Hellins, who described the latter and critically compared it with the former, were unable to find any material difference between them. The only points of difference were tint of ground and colour of hairs. Thus Mr. Hellins says:—"*Adonis* (*bellargus*) has its ground colour deeper green, with the hairs or bristles black; while *corydon* has the ground colour of a lighter brighter green (a green with more yellow in its composition), and the hairs light brown."*

Distribution.—*L. corydon* occurs in chalk and limestone districts throughout Central and Southern Europe, also in Western Asia. On the Continent there appears to be two broods annually, but in England, so far as I know, there is but one emergence of the imago each year, and this, as a rule, occurs a few weeks in advance of the second flight of *bellargus*. On our South Downs *corydon* is generally well out, some time between the middle and end of July, and continues on the wing well into August; but at Ventnor in 1879, and again in 1883, the only

* 'Larvæ of British Butterflies and Moths,' vol. i., p. 110.

years I had opportunity of seeing the species in that locality, it was not out till late in August, and was noticed in some numbers the first week in September, at which time *bellargus* was also observed. The two species often occur in the same districts, and sometimes even in the same localities in those districts, as instanced above; but I am inclined to suppose that each has its particular settlement or colony. I have been unable to verify this, however, and the information obtained from others upon the point is somewhat indefinite. The few specimens of *bellargus* I have taken (at Ventnor only) were obtained within a short distance of *corydon* head-quarters, and stray examples of the last-named species were in each instance disporting themselves around and about. I first supposed the *bellargus* captured at such times were precocious individuals, and expected that as the number of *corydon* diminished that of *bellargus* would increase; but such was not the case. *Corydon* disappeared from the scene, but it was not replaced by *bellargus*; and I therefore concluded that the odd examples of *bellargus* were, like the *corydon* flying with them, wanderers from their respective head-quarters.

Note.—In referring to the under-side variation (*ante*, pp. 6, 7), I omitted to mention the occurrence of an extra basal ocellus on the inner margins of hind wings, *vide* figs. 7, 10, Pl. I.

(To be continued.)

THE *CRAMBUS* *CONTAMINELLUS* DISCUSSION; WITH DESCRIPTION OF *CRAMBUS* *SALINELLUS*, MIHI.

By J. W. TURT, F.E.S.

AFTER Mr. Tugwell's communication, giving Mr. W. H. B. Fletcher's opinion as to the nomenclature of *Crambus contaminellus*, had been published (*Entom.* xix. 162), I wrote to that gentleman and asked him to work out the matter fully, as I thought it advisable to come to some definite conclusion, and his final opinion would at once dispose of the matter. On November 15th, 1886, following a splendid consignment of the salt-marsh species, I received a letter from Mr. Fletcher, which I consider effectually settles the discussion, and confirms his previous opinion; and as I knew the letter would be most interesting to all collectors of the Crambidae, I have since obtained his permission to publish

it. I may mention that in the following communication, for the purpose of distinction, the Deal and Blackheath species is called *C. cantiellus*, and the salt-marsh (Sussex and Lancashire) species is called *C. contaminellus*.

Mr. Fletcher writes:—"In the box I send about a score of *Crambus contaminellus* (salt-marsh), from which you will learn a part of the range of variation of the species. A part, for some specimens are much more suffused with black scales than any I have sent you. I have one with the whole of the inner half of the wing, except the veins, black, the costal and hind-marginal part being rich light brown. Another specimen is pale wainscot-brown, with a few dark scales dotted about, and without a trace of the transverse lines. It is, however, perfectly distinct from your species. You ask my present opinion as to the nomenclature of the two species; well, let me first state that I am quite certain that *C. cantiellus* and *C. contaminellus* are distinct species. The following are the chief differences that I can see:—

"1. *C. cantiellus* is a smaller and more lightly built insect altogether than *C. contaminellus*.

"2. In *C. cantiellus* the costa is sharply shouldered along the basal third of its length, and then runs more straightly to the apex, which is consequently very sharp; while in *C. contaminellus* the costa is almost regularly arcuated from base to apex (the curvature of the wing of the female being greater than in that of the male), the crown of the arch is beyond the middle of the costa, and the apex of the wing not very acute.

"3. In *C. cantiellus* the ground colour of the fore wings is of a rather redder shade of brown, and not prone to be suffused with black scales, as in *C. contaminellus*.*

"4. In *C. cantiellus* the oblique transverse lines are very narrow, *nearly parallel*, acutely and irregularly serrated; one of the saw-like teeth of the inner line, about the middle of the wing, is very conspicuous, and in the case of worn specimens, when the rest of the line has nearly disappeared, looks like a central V, with its angle pointing towards the base of the wing. In *C. contaminellus* the inner line starts from about the middle of the costa, *curves* towards the hind margin, runs very obliquely across

* I am afraid this latter character would not hold good in long series. To me, *cantiellus* is much the darker, and nearly black varieties of both species occur.
—J. W. T.

the wing, reaching the inner margin at about one-third of its length from the base. The outer line starts from the costa rather nearer the beginning of the inner line than the apex, runs about two-thirds across the wing with a full curve, forms a bluntish angle pointing inwards, and then goes with another curve towards the anal angle. Both of these lines are often ill-defined; sometimes one or both are absent; by no stretch of imagination can they be called parallel, nor have I seen a specimen in which there is anything like a central V. In addition to the two lines there is in *C. contaminellus* a more or less conspicuous black streak from the base, running through the middle of the wing as far as the inner line, which often at first sight appears to be lost in it, but can usually be traced beyond it. I dare say I have bred 150 specimens or more, but never saw one in which this longitudinal line was quite absent. On the other hand, none of the *C. cantiellus* you gave me have a trace of it.*

"5. In some of the males of *C. contaminellus*, and to a less degree in a few of the females, there are traces of a dark marginal line on the hind wings. There is no sign of this in the hind wings of the specimens of *C. cantiellus* before me. It might perhaps be seen on some out of a large number of bred specimens,† and is in any case of no value as a character, being so often quite absent in *C. contaminellus*.

"Next to deal with the figures and descriptions:—According to Staudinger and Wocke's 'Catalogue,' p. 220, Hübner figures *C. contaminellus* three times—fig. 59 as *contaminella*, fig. 442 as *inquinatella*, and fig. 364 as *immistella*. Herrich-Schäffer figures it twice—88, male, and 89, female.

"Of these figures we may dismiss Hb. 364. In his copy of the work Prof. Zeller has written under it, '*angulatella* Dup.' = *geniculeus* according to Staudinger. I feel quite certain that, be it what it may, it is nothing like either of the species we are considering. Hübner's fig. 442, *inquinatellus*, and H.-S. 88 and 89, seem to me to be quite clearly the salt-marsh *C. contaminellus*. Herrich-Schäffer's figures are *very good*, but Hübner's wants the basal streak; the shape of the wings, and form and direction of the transverse lines, however, are good. Of course Hübner's

* I have never seen one with any approach to this longitudinal line.—J. W. T.

† In none I have had, some considerable number of which have been very fine, has there been any trace.—J. W. T.

name cannot stand, as it was given much earlier to the species we know by that name.

"The whole difficulty in the synonymy centres in Hübner's *C. contaminellus*, fig. 59. On the whole I still think it represents your *cantiellus*. It is about right in size. The V-mark on the inner transverse line is distinctly, perhaps too much so, represented. The outer line would do for that of either species. The absence of the basal streak, so far as it goes, agrees with your species. On the other hand—I omitted to point out this before—the figure is dotted at its hind margin, as is *C. contaminellus*, while only a few very minute black scales can be seen near the anal angle of the fore wings of the other. The descriptions to which I have access do not help us much. Stainton (Man. ii. 183) says:—'Fore wings ochreous-brown,' which agrees best with the colour of *C. cantiellus*. The ground colour of the other I should say was rather wainscot-brown. I am told that the description was written from Blackheath specimens of *C. cantiellus*. He gives Preston a locality for *C. contaminellus*, but it does not follow that he had any from there before him.

"Zeller's Latin description, 'Chilonidarum et Crambidarum gen. et spec. 43,' refers to *C. contaminellus*. He says, 'Venæ medianæ dimidio basali pallido inferius fusco-marginato,' and 'margine postico medio nigro-punctato.' As a habitat, however, he gives 'pascuis aridis,' so probably he possessed both species,* but only described one of them, not distinguishing them.

"If I may express an opinion on the resultant of this evidence, I should say that I think that *C. cantiellus* is really Hübner's fig. 59, = *C. contaminellus*, Hb., possibly of Stainton†; and that the species, represented by Hübner's fig. 442 as *inquinatella*, and by Herrich-Schäffer's 88 and 89, and described by Zeller, is our salt-marsh *C. contaminellus*, which, if I am right about fig. 59 Hb., requires a new name. This you, as the first to separate the species, have alone the right to bestow.

"After all you are in a far better position to come to a right decision than I am, as, in addition to your knowledge of the species, you have the opportunity of consulting the chief authorities of the day on Lepidoptera, a privilege which one who lives

* Vide 'Entomologist,' xix., p. 73. "*Crambus contaminellus* in the Zeller Collection."—J. W. T.

† Certainly so; vide Entom. xix. 76.—J. W. T.

entirely in the provinces rarely enjoys. You have no doubt consulted them. It would not surprise me if you came to the decision that, as fig. 59 Hb. is of such doubtful identity, the best course is to ignore it, and to take fig. 442 Hb. as representing *C. contaminellus* (salt-marsh) for the first time unquestionably, with the further result that the other species stands as *C. cantiellus*, Tutt."

After carefully reading this, I think no one, who knows anything about the matter, would doubt that Mr. Fletcher has come to a most satisfactory conclusion, and proved beyond doubt that I was wrong in my synonymy in the first instance. His last paragraph is only his courteous way of qualifying a mature and carefully-formed opinion, and the suggestion concerning Hb. fig. 59 I should not think of adopting. The name *C. cantiellus* will therefore drop through as a synonym of *C. contaminellus*, Hb., fig. 59, and the synonymy of *C. contaminellus* stand as follows:—

Crambus contaminellus, Hb., fig. 59, Sta.
cantiellus, Tutt.

The British localities recorded so far are—Blackheath (specimens, however, have not been captured here, I believe, for some years), Deal, and Shoeburyness (Entom. xix. 27). The time of appearance from the middle of July to the middle of August.

A new name has to be found for the salt-marsh species which is in most of our collections under the name of *contaminellus*. Asking Mr. Fletcher to suggest a name for the insect, he has sent me four names, any of which would be very suitable. As, however, in all our correspondence this insect has been known as the *salt-marsh* species, I think the name *salinellus* especially applicable to it. The synonymy of the species will therefore be—

Crambus salinellus, Tutt.

inquinatella, Hb., fig. 442.

contaminellus, H.-S., figs. 88 and 89; Zell.; Heinemann.

Mr. Fletcher has not gone into Heinemann's description, but there seems no doubt it refers to the salt-marsh species. The larva of this species has been described under the name of *contaminellus* by Mr. Buckler (Ent. Mo. Mag. xv. 38), and Mr. Porritt (Entom. xix. 130).

The only recorded British localities are—Preston (Lancs.), Sussex Coast, and Isle of Sheppey (Entom. xix. 130). Strange

to say, I myself took it last year (1886) in two localities; on the last Saturday in June and the last Saturday in August, from the lamps on Higham Railway Station, whence the insect had probably flown from the adjacent marshes; and during the first week of August, at Deal, on a piece of ground covered by the sea occasionally during the winter. I was very much surprised at the capture of the insect at Deal, on ground which I have closely worked since 1883, and where I have never before seen a specimen. This year I took six one evening, but failed to obtain it when on the same ground several other evenings afterwards.

The insect is on the wing from the middle of June until late in September. Mr. Fletcher wrote me that he had larvæ at the time the imagines began to appear, so that it seems the early moths of one season produce early moths the next season, and the late specimens of one season late ones the following.

I think this effectually disposes of the *contaminellus* difficulty, and brings the matter so far to a satisfactory conclusion, as it clears up what has been a most confusing problem, and at the same time settles beyond doubt the distinctness of the two species which have been previously united under one name.

I now give the following description of *Crambus salinellus*, Tutt:—Expanse, male, 8 to 11 lines; female, 9 lines to 1 in. *Anterior wings* broad, costa regularly arched, apex not very acute; colour wainscot-brown, more or less dusted with black scales; in some specimens the wings are very much suffused; two transverse lines, the *first* starts from about the middle of the costa, curves towards the hind margin for a short distance, and then runs obliquely across the wing towards the body and meets the inner margin at about one-third from the base; the *second* commences on the costa nearly midway between the commencement of the first line and apex, curves towards the hind margin near the upper part, forms an angle pointing towards the thorax at about two-thirds across the wing, and then curves towards the anal angle; a black streak crosses the centre of the wing, longitudinally, from the thorax to the first line, beyond which it is sometimes visible. *Posterior wings* pale grey in colour; in some specimens there are traces of a dark line parallel to the hind margin.

Blackheath, January, 1887.

ON MELANISM.

BY T. D. A. COCKERELL.

MR. DOBREE'S paper on this subject (Entom. 25) is certainly most interesting and suggestive, and the facts he brings forward seem to me extremely significant, though the deductions he draws from them are perhaps open to question. From the presence of melanic forms in mountain regions, and in the west of Ireland and Scotland, it seems only natural to suppose that the peculiar features of these regions are responsible for the variation; and of all causes that seem probable from this point of view nothing comes more prominently before us than the extreme mistiness and dampness of the atmosphere. The view that melanism is due to cold has been prominently set forth on many occasions, and, indeed, has in its favour no small share of evidence; yet, as Mr. Dobrée has shown, melanism does not occur in the cold and dry districts of Russia, Siberia and Canada, and does, on the contrary, occur in the much warmer and damper region of Western Ireland.

To further illustrate this argument, I will take a few examples which, though not of insect species, have no small bearing upon the question. It has been demonstrated in the case of *Limax arborum*, a species of slug, Scottish specimens are much darker in colour than English,* and that examples from elevated situations both in Italy and in Ireland are entirely suffused and black in colour, while those from the lowlands are pale grey, spotted or striped.† Another variable slug, *Arion ater*, occurs in dry situations of a brick-red or brown colour, while specimens from damp and marshy spots are almost invariably pitchy black. In both these cases I believe the darkening of colour to be caused, perhaps partly by cold, but certainly in great measure by the humidity of the atmosphere.

Mountain-regions are often enveloped in mist, and here it is that a darkening of colour occurs, as in well-known alpine forms of many Lepidoptera, found constantly in similar situations, as well as many more isolated cases, such as the dark variety of *Acidalia contiguarua* found near Bettws-y-coed.‡ It seems un-

* Roebuck, 'Journ. Conch.' 1885, p. 276.

† 'Zoologist,' 1886, p. 341.

‡ 'Entom.' 1879, p. 67.

reasonable to dismiss Yorkshire melanism as "merely local aberration," nor do I think we need do so, even for the sake of our theory. I do not know the degree of humidity of the Yorkshire atmosphere, but should not be surprised to learn that it is greater than in the southern parts of the kingdom. The black variety of the common field slug (*Limax agrestis* var. *nigra* Butl.) is very frequent about Wakefield and Beverley, and probably elsewhere in Yorkshire, but, except for a single example at Stroud, in Gloucestershire, it has never been known to occur in the South of England, nor has it been discovered anywhere on the Continent. Among Lepidoptera many dark Yorkshire forms are known, notably *Eupithecia albipunctata* var. *angelicata*, Prest., from Selby. Sea-coast specimens are also frequently dark. *Cistela sulphurea*, L., is very dark near the sea, and particularly so at Deal.*

The negro variety of the human race probably had its origin in the very humid, though anything but cold region of Central Africa, and among European races those of damp and maritime countries are darker than the flaxen-haired Teutonic tribes, which came from the dry regions of Central Europe and Asia.

Whether this view will ultimately hold good or not it is impossible to say, but I think it has at least as much in its favour as the others that have been advanced. It would appear that humidity of atmosphere is the main factor in producing melanism, though contact with water, as in the case of aquatic and amphibious species, has no such effect. Much, however, needs to be known, not only as to the geographical distribution of varieties, but also the physical conditions under which they exist; and I would appeal to those who so frequently record melanic and other varieties, not to omit, as they have so frequently done in the past, all notice of the conditions under which the variation occurred. I think that as our knowledge increases, some form of classification by varietal nomenclature will become more and more necessary for the adequate arrangement of our facts, and for convenience sake I should be glad if some varietal name might be adopted which would serve universally for all melanic forms.

5, Priory Road, Bedford Park, Chiswick, February 5, 1887.

* Wollaston, 'The Variation of Species,' p. 60.

PEDIGREE MOTHS.

IN a paper upon Pedigree Moths, read before the London Entomological Society, February, 1887, Mr. Francis Galton, F.R.S., explained the plan and object of his proposed experiments in breeding moths, with the view of obtaining certain hereditary data needed to confirm results gained in the course of previous experimental research, when other subjects than moths were treated.

The substance of Mr. Galton's remarks had, some days before the meeting of the Society took place, been printed and circulated among members; and it is an abridgment of this circular rather than a digest of the paper itself that is now brought before the readers of the 'Entomologist,'—some of whom may not, so far, have heard anything of Mr. Galton's contemplated investigation,—in the hope that some among them may be in a position to assist Mr. Galton in his enquiry, either by furnishing ova of the moth required or perhaps valuable suggestions, the practical outcome of their experience in moth breeding. Mr. Galton says:—

"It is intended in each case to procure broods through a succession of selected specimens, along three lines of descent from a single pair of individuals, so that there would be three parallel broods in each generation. The particular characteristic that is selected for these experiments must admit of being accurately measured, in other respects the choice is immaterial. For brevity of explanation I will suppose it to be *size*. Then, starting from the brood of the original pair:—(1) A few of the largest of either sex would be separated and mated; out of their progeny a few of the largest would again be taken and mated, and so on, for several generations. (2) Exactly the same process just described would be gone through, after substituting throughout the words 'medium-sized' for 'largest.' (3) Similarly, after substituting the word 'smallest' for 'largest.'

"The result will be to obtain a precise measure of the diminution of rate at which a divergence from the average of the race proceeds in successive generations of continually selected animals. The rate during the first few generations is probably the same, whatever may be the characteristic observed (whether

size or anything else), and whatever may be the kind of animal or plant experimented on. It will depend on the amount of the ancestral divergencies, measured with a special and relative unit ('probable error,' as mathematicians call it), that I have often written about, and cannot stop now to describe. This unit enables us to treat on equal terms individuals of either sex, or those in separate broods that have been affected by differences of nourishment, &c. I have shown the rate of divergence to be the same within the limits of statistical error, in the case of (1) weight and size of sweet-peas; (2) human stature; (3) human eye-colour. The course of investigation pursued is necessarily technical. It will be found described in 'Law of Regression' (Journ. Anthropol. Inst., 1885); 'Family Likeness in Stature' (Proc. Royal Soc., 1886); 'Family Likeness in Eye-colour' (Proc. Royal Soc., 1886)."

Acting on the suggestion of Mr. Merrifield, Mr. Galton proposed *Selenia tetralunaria* (*illustraria*) as a suitable moth for his experiment, but the majority of the Fellows, who took part in the discussion following the reading of paper, did not concur in this, and various other British and some exotic silk-producing species were put forward.

What is required is, as pointed out by Mr. Galton, a moth that is "hardy, quickly breeding, of small size, easily measured and preserved, and bearing broods of about 50 to 100 individuals." *Selenia tetralunaria* possesses most of these requirements, but, although it is double-brooded, it can hardly perhaps be called quick breeding. Further, would not the results obtained from the two broods of this insect be almost on a par with those obtained from two distinct species?—*tetralunaria*, the spring brood, would produce *æstiva* (*delunaria*), the summer brood; and *æstiva*, *tetralunaria* certainly; but the comparisons would be, spring brood with spring brood, and summer brood with summer brood. Mr. Galton, however, is of opinion that allowance can be made for any difference in size known to exist between individuals of the seasonal broods.

Size is, no doubt, under the direct influence of nourishment, and is perhaps the only character in the perfect insect that is directly affected by food. As is well known, many breeders of Lepidoptera pride themselves on rearing large specimens, and it is not at all an uncommon thing to see bred specimens of a

species surpassing wild examples in the matter of wing expansion. On the other hand, careless breeders—those for instance who fail to supply their charges with a liberal quantity of food or with a suitable pabulum—rear nothing but under-sized specimens. So we see that it is quite possible to increase or decrease the normal size of a species, even in one generation. To what extent it is possible to increase the size of any given species has not yet been demonstrated, but it is easy to foresee that the limit in the opposite direction would be speedily reached. Probably semi-starved individuals would be incapable of producing fertile offspring, and so such a “breed” would die out with the second generation.

Experiments of this nature do not, however, come within the scope of Mr. Galton's proposed investigation. He only desires to set apart the smallest individuals of a brood on the one hand, and the larger on the other, reserving a selection of the remainder for the medial race. Each race is to be kept apart, and the parents of each of several successive generations to be respectively the smallest of under average-sized race, the largest of above average-sized race, and the medium-sized individuals of the medial race.

In conducting such a course of breeding the larvæ should, properly, be subjected to exactly the same external influences, and supplied not only with the same kind of food, but sprays or branches from the same plant. If this is not done all would not be on equal terms, and descendants of the originally smaller individuals might, by being placed in a more favourable situation and fed on a more nourishing food, attain, or even excel, the size of the descendants of the larger original pairs.

Anyone who may feel disposed to aid in these investigations, upon which questions of considerable scientific value depend, will do well to communicate with Mr. Francis Galton, 42, Portland Gate, London, S.W.; or Mr. F. Merrifield, 24, Vernon Terrace, Brighton.

R. S.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS RAPÆ IN CANADA.—In the annual address read before the Entomological Society of Ontario, the following paragraph appears :—" *Pieris rapæ*, although still plentiful, is no longer the terror to cabbage growers it formerly was, its natural enemies having multiplied to an extent sufficient to keep it within some reasonable degree of subjection." It will be remembered that the parasites of this butterfly were collected in Europe, and sent out to North America upon the appearance of *P. rapæ* becoming too numerous after its introduction to that continent.—JOHN T. CARRINGTON.

EUCHLOË CARDAMINES IN AUTUMN.—I noticed, in a late number of the 'Entomologist,' a record of a specimen belonging to the second brood of this species. I have much pleasure in corroborating the statement of your correspondent, for on the 13th of September, 1886, I saw several flying about on the furze-plat near this place. I captured four males and one female, and could have taken several more. Their colour is very bright, and by no means less vivid than in vernal specimens. The occurrence of a second brood of *E. cardamines* is so extremely rare that I shall be glad if any of your readers can offer me an adequate explanation.—SYDNEY HAYLOCK; Rosemont, Maidenhead, January 13, 1887.

RETARDED EMERGENCE OF EUCHLOË CARDAMINES.—In the spring of 1885 I purchased some pupæ of *E. cardamines*, and most of them emerged in the breeding-cage at the usual time during the earlier half of that year. The cage containing the rest of the pupæ, which were supposed to be dead, as also others which were really so, was put away some time about the following December. It was not looked into again until July, 1886, when I was surprised to find that two imagines, one male and the other female, had in the interval come out and died. I believe that such retardation among Rhopalocera is far from usual. Prof. Westwood ('Mod. Class. of Insects,' ii. 349) refers to a notice of similar retardation having occurred in individuals of the genus *Thais*, and speaks of that as "the only instance on record of such an occurrence amongst the butterflies." Noticing this, I venture to address you on this subject. Prof. Westwood published his book

in 1840, but I do not recollect to have met with any parallel record in the pages of the 'Entomologist'; though, in your number for last October (Entom. xix. 247), Mr. A. G. Field asks for an explanation of an individual of the same species (viz., *E. cardamines*), taken on August 18th. Amongst the Heterocera, of course, retardation is not uncommon; two out of four *Dicranura furcula* I have bred waited a year; and your columns contain notices of such delay on the part of *Sphinx ligustri*, *Dicranura vinula*, *Saturnia carpinii*, *Eriogaster lanestris*, *Endromis versicolor*, *Cucullia verbasci*, *Emmelesia unifasciata*, *Eupithecia expallidata*, *E. togata*, and probably others.—H. CHITTY; 23, Queen's Gate Gardens, London, S.W., February 21, 1887.

COLIAS EDUSA IN ESSEX.—As I see notices of the appearance of *C. edusa* in 1886 are still being sent to the 'Entomologist,' I write to say I saw two good specimens on October 6th, while partridge shooting near Newport, Essex.—WALDEGRAVE; 13, Montagu Place, Montagu Square, W., February 1st.

COLIAS EDUSA IN SURREY.—On the 27th of August last I met with two *C. edusa* near Oxshott station, Surrey. Both specimens were males in good condition. It is the first time I have seen this species in that locality. None appeared at Kingston last year.—F. V. THEOBALD; Kingston-on-Thames.

SPHINX CONVULVULI IN MIDDLESEX.—I took *Sphinx convolvuli* on August 7th last year, on a fence in Holloway. Several specimens have been taken near.—A. J. FIELD; 145, Isledon Road, Seven Sister's Road, Finsbury Park, N.

PHIGALIA PEDARIA IN AUTUMN.—*P. pedaria* (*pilosaria*) seems to appear much earlier than Newman states. I found one upon a tree on the 15th of December, 1885, at Bedford. As I was only passing through the town I had not time to look for more.—M. ROUTLEDGE; 50, Russell Square, London, Jan., 1887.

THE HABITS OF TRIPHÆNA INTERJECTA.—Mr. Anderson's note (Entom. 41) recalls to me a similar experience of the habits of this species in July, 1880. Prior to that date I had only occasionally taken *Triphæna interjecta* at flowers, and very sparingly at sugar. On a fine afternoon in the first week of July of that year, about 5 o'clock p.m., while walking along a lane leading from this place to New Malden, I was surprised to see this species in profusion, flying wildly about the hedges

in the bright sunshine, and sometimes settling on the flowers of the bramble. Not having any net or boxes with me, I ran home to get them, but on my return to the lane, in the course of an hour, the flight of the moth appeared nearly over, and not many more than a dozen specimens were secured. On the following afternoon the locality was again visited by me, with the object of collecting a long series of *Triphaena interjecta*; although the sunshine was as brilliant, and the air as calm and warm as on the preceding afternoon, not a single specimen was to be seen, nor have I since met with the species in the same locality.—H. Goss; Berrylands, Surbiton Hill, February, 1887.

ON THE “LITA” GROUP OF THE GELECHIIDÆ.—In the autumn of 1885, whilst inspecting Mr. Stainton's collection of Tineina, I was struck by the difference between his series of *Lita maculiferella* and my own. On arriving at home I sent my series to him, and he replied that the two series were unquestionably distinct. I have, therefore, named my species *Gelechia semidecandrella*, from its food-plant *Cerastium semidecandrum*. The larva is yellow, with a black head, and spins up the the shoots, flowers, and seeds of the *Cerastium* in April and May, emerging into the imago state in June and July. It is with us confined to the coast sand-hills. I should be pleased to hear whether the *Lita maculiferella* of Mr. Stainton has been actually bred from hawthorn, or only finds shelter in that plant. Now I take, very sparingly, the imago of *Lita junctella*, not on the sand-hills, but in a very distinct locality, in woods and lanes near the mosses, at Witherslack. The larva of this insect no doubt feeds in summer; the imago emerges in autumn and hybernates, as I have taken worn specimens in spring. The food-plant is unknown, but I strongly suspect seed-capsules of *Stellaria* or *Cerastium*. I will gladly send Mr. Tutt a specimen for inspection. Some seven years ago Mr. Hodgkinson found this species swarming on an old mossy wall at Witherslack in the afternoon sunshine. Is Mr. Tutt sure that the No. 4 in his paper (Entom. 28) is not referable to *Gelechia marmorea*? which I take in many forms, ranging to dark brown and black in some examples. *Lita knaggsiella* was taken rather freely by Mr. Barrett on the trunks of oak trees at Haslemere. No doubt that gentleman will give us full particulars, and also say whether he ever bred it from seed-

capsules of *Stellaria holostea*. I have somewhere read or heard that some continental entomologist bred it from that plant.—J. H. THRELFALL; Ashton, Preston, February, 1887.

LARVÆ OF MYELOIS CERATONIÆ.—In October last a friend of mine had a sack of rice-cones, in which many reddish larvæ were feeding, which produced about fifty fine *Myelois ceratoniæ* during November and December last.—W. THOMPSON; 183, Stantonbury, Stoney Stratford, Bucks, February 7, 1887.

FAVOURABLE NIGHTS FOR SUGARING.—I have frequently noticed, particularly last October, that moths come freely to sugar during great gales of wind blowing south-west. On such stormy evenings (sometimes accompanied with heavy rain) I have ventured out, and been most successful. Though not at all a comfortable or an easy experiment, I recommend entomologists to try "sugaring" in a gale of wind. The following are a few captures on stormy nights only:—*Agriopis aprilina* (several), *Xylina socia* (*petrificata*), *Anchocelis lunosa*, *A. litura*, *Scopelosoma satellitia*, *Miselia oxyacanthæ*, and many other common species. On my return from town, October 8th, I took a male specimen of *Heliothis armigera* at sugar, which is my second capture of this species; the first in 1878; but I know of no other from this district.—J. M. ADYE; Somerford Grange, Christchurch.

PRESERVING INSECTS.—Between three and four years ago, in spite of a good supply of camphor which was always kept in my boxes, I lost some hundreds of specimens of insects through the attacks of those horrid pests, the mites, finding on some of the boards little else but a heap of dust, where a short time before no traces of mites were to be seen. With regard to Mr. Dannatt's note (Entom. 43), I feel great pleasure in giving the particulars he asks concerning the use of corrosive sublimate, which may prove welcome to others of your readers at the same time. There are two ingredients only,—twelve grains of powdered corrosive sublimate dissolved in two ounces of methylated spirits of wine, or forty-eight grains dissolved in half a pint of the spirit. This will be found the exact strength for the purpose of preserving specimens. With regard to the use of the poison, pour the mixture into a shallow basin, or any vessel of this description; then take the insect, which must be quite dry, by the pin with a pair of forceps, and hold it completely sub-

merged in the solution while you can count six; then take it out and shake it gently, and take off the superfluous drops at the tips of the wings with blotting-paper. Then place the specimen on a window-sill to dry, lifting the sash about an inch or so, where a strong draught can be obtained; this is necessary to keep the scales from setting in a mass. Put the insect in a position so that the wind can blow from the tail to the head. I find that insects covered with long down are best treated by holding them by the pin in the left hand, and then with a camel-hair brush dipped in the solution touch the under side of the bodies and wings until they become saturated with the poison. Insects treated in this way are perfectly proof against all depredators. Mould will not affect them, neither will mites, nor the larvæ of several beetles and "clothes-moths," which at other times destroy so many specimens, to the chagrin of the collector. It is better for beginners preserving Lepidoptera to practise a little while on very common species, so that they will not be afraid of spoiling specimens of any value.—THOMAS HILL; 15, Russell Street, Willenhall, February 7, 1887.

[Pure alcohol should be used instead of methylated spirits, because the latter is prepared with a solution of gum, which becomes deposited all over the insect, as well as the sublimate, on the evaporation of the spirit being completed. The treatment recommended by Mr. Hill is doubtless effective, but should be used as little as possible, as it always more or less injures the specimens. The use of naphthaline in the boxes or cabinet drawers is far preferable to all other deterrents, for camphor is by no means effective, and frequently causes dried insects to become greasy.—J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *February 2nd, 1887.*—Dr. D. Sharp, President, in the chair. The President nominated Mr. Robert M'Lachlan, F.R.S., Mr. Osbert Salvin, M.A., F.R.S., and Mr. Henry T. Stainton, F.R.S., Vice-Presidents during the Session 1887-1888. The Rev. W. J. Holland, M.A., of Pittsburgh, United States; Dr. F. A. Dixey, M.A., Fellow of Wadham College, Oxford; Mr. C. J. Gahan, M.A., of Brompton,

S.W.; and Mr. Sydney Klein, F.R.A.S., of Willesden, N.W.; were elected Fellows. Mr. P. Crowley exhibited a new species of *Synchlœ*—*S. Johnstoni*—from Kilima-njaro; also, for comparison, specimens of *Synchlœ mesentina* and *S. hellica*, which the new species closely resembled. Mr. W. White exhibited a number of preserved larvæ of European Lepidoptera in various stages of growth,—including nine examples each of *Saturnia carpin*i and *Deilephila euphorbiæ*,—illustrating the gradual development of the markings and colours, as explained by Prof. Weismann, in his ‘Studies in the Theory of Descent.’ Mr. Gervase F. Mathew exhibited a variety of a female of *Lycæna telicanus*, from the neighbourhood of Gallipoli, Turkey: also some specimens of a *Lycæna* from Vigo, believed to be varieties of *L. baton*, but differing from the type in being much larger and darker. He further exhibited several examples of a *Leucophasia* from Vigo, which appeared to be identical with *L. æstiva* (Staud.). Mr. Porritt exhibited, on behalf of Mr. N. F. Dobrée, a series of a remarkable red form of *Tæniocampa gracilis*, bred last season from larvæ collected in Hampshire. Mr. Eland Shaw exhibited specimens of *Pachytylus cinerascens* (Fab.), *Mecostethus grossus* (Linné) and *Gryllus flavipes* (Gmel.), and read a “Note on the Identity of *Gryllus* (*Locusta*) *flavipes*, Gmel.” The Secretary read a communication from Prof. Riley, of Washington, on the subject of the “Australian Bug” (*Icerya purchasi*). It was stated that the insect had of late years become very destructive to various trees and shrubs in California, into which country, as well as into New Zealand and Cape Colony, it had been introduced from Australia, where it was believed to be indigenous; but on this point further evidence was asked for. The Rev. T. A. Marshall communicated “A Monograph of the British Braconidæ,” Part 2, being a continuation from Part 1 of the ‘Transactions’ for 1885. Mr. Francis P. Pascoe read a paper entitled “Descriptions of some new species of *Brachycerus*.” Mr. Francis Galton, F.R.S., read a paper on “Pedigree Moth-breeding as a means of verifying certain important Constants in the General Theory of Heredity.” In this paper Mr. Galton suggested the institution of a system of experimental breedings, to be continued for several years, with the object of procuring evidence as to the precise measure of the diminution of the rate at which a divergence from the

average of the race proceeds in successive generations of continually selected animals. Mr. Frederic Merrifield read a paper (by way of an appendix to Mr. Galton's paper) entitled "A proposed method of breeding *Selenia illustraria*, with the object of obtaining data for Mr. Galton." Mr. M'Lachlan said he considered the fact that *S. illustraria* was dimorphic an objection to its selection for the experiments proposed, and he suggested that the common silkworm moth, or some other large Bombyces, would be more suitable for Mr. Galton's purposes. Professor Meldola called attention to some observations on *Selenia illustraria* by Dr. Knaggs in vol. iii. of the Ent. Mo. Mag., which had some bearing on the projected experiments; and he remarked that, although for some reasons the species selected was well adapted for testing Mr. Galton's conclusions, he believed that the fact of the moth being seasonally dimorphic was likely to introduce disturbing elements into the experiments which might influence the results. The discussion was continued by Dr. Sharp, Messrs. Baly, Kirby, White, Klein, Porritt, Dunning, Waterhouse, Bates, Merrifield, Galton, and others.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 27th*, 1887. R. South, Esq., F.E.S., Vice-President, in the chair.—Messrs. F. H. Barclay and C. Roberts were elected members. Mr. J. J. Weir exhibited *Nilasera pirama*, Moore, and *N. amantes*, brilliant butterflies from Ceylon; also a piece of amber containing three specimens of Chrysomelidæ, one of Coccinelidæ, and one of Orthoptera. Mr. Billups exhibited living specimens of *Rhagium bifasciatum*, Fab., from Braemar, and contributed notes. Mr. J. Jenner Weir communicated a paper entitled "Notes on the comparative rarity of Lepidoptera-Rhopalocera once common in the neighbourhood of Lewes." The following is an abstract:—

"In presenting to the Society this evening a copy of my friend Mr. J. H. A. Jenner's list of the 'Macro-Lepidoptera of East Sussex,' I deem it a fitting opportunity to make some remarks on the present scarcity, in that district, of several of the species of Rhopalocera which in my young days, half a century ago, were frequently, or even commonly, met with.

"*Aporia crategi*.—Mr. Jenner states, 'Formerly at Holmbush Henfield.' When about the year 1838 I first in earnest commenced to make a

collection of the British Lepidoptera, I was visiting my relations in the month of June at Keymer, a parish situated between the Burgess Hill and Hassocks Gate Stations of the London and Brighton Railway, I sent to my uncle, the late Mr. Auckland, of Lewes, for a net, and he very kindly gave me the first I possessed; he was himself an entomologist, and I may say that it was mainly owing to him that I took up the study. As soon as I had obtained the net I went into a field at the back of the house, and the first insect I took was *Aporia crataegi*, and it was very abundant; probably I might have very easily taken a hundred specimens. This by no means surprised me, as Mr. Auckland had often told me that he had always obtained it in that neighbourhood for many years in succession. Being a young beginner, and feeling sure of taking it in after years, I captured but a moderate number: of these one still remains in my cabinet. There was a small mill-stream ran in front of the house; the sides of this were well-wooded, and there the insect abounded. I visited Keymer the next year, then intent on taking more *A. crataegi*; I saw but one, and this I still possess. For some fifteen years I was often at Keymer, but never did I see the insect again; and I believe that now I am the only Sussex entomologist living who has ever seen the species in plenty in that district, and it appears from Mr. Jenner's note that the insect is extinct in the county.

"Mr. Auckland's note, which I have before me, gives as localities, 'Chailey, May 30th, 1834; Newick, June, 1835; Lindfield, June, 1836. My own opinion is that in the earlier decades of the century a flight of this insect visited Sussex from some part of the Continent, and that our climate has not been favourable to its permanent establishment, and that it has gradually become extinct.

"*Aporia crataegi* has disappeared almost entirely in the New Forest, where I have taken it myself, and where it was at one time very abundant. It first became rare in the eastern parts of the Forest; it probably still lingers in the western parts, where I have taken it of late years, but in 1886 I could not hear that one had been seen.

"*Leucophasia sinapis*.—Mr. Jenner's note of this species is 'Very scarce and apparently extinct in many localities where formerly found.' This is quite in accordance with my own experience: it used to be taken by my uncle near Lewes in 1834, where it is now extinct, and, although I often visit Abbot's Wood, and have done so for years past, I never found it there. This appears to me to be a case of an indigenous insect becoming extinct in certain parts of Sussex, which, from the weakness of its flight, was not likely to have flown over from the Continent, as might have been the case with *A. crataegi*, a gregarious insect, which *L. sinapis* is not.

"*Melitæa aurinia*.—Of this species Mr. Jenner's note is 'Local and rare, Chailey and Ringmer.' I have sought in vain for this insect in

Sussex; it was at one time very abundant at Chailey, the home of my ancestors. I recollect that some school-children brought over to Mr. Auckland from thence a clothes'-basket covered with pinned specimens of *M. aurinia*; there were about 400. Mr. Auckland's note is as follows:— 'Abounded at Chailey from 8th May to June, 1834; I had sent me many hundreds.'

"*Vanessa c-album*.—Mr. Jenner notes it as 'Very rare; once at South-over, Lewes; Guestling, rare; Tilgate.' I have never taken this species in Sussex, but in the hop-gardens it was once common, so much so that the peasants had a local name for it, *viz.*, the 'silver bug.' An aged relation of mine has often described the species to me as being very well known, but, although he made every endeavour between thirty or forty years ago to obtain the larva for me, he found it was extinct. He himself, a grower of hops, was very observant, and his testimony is therefore of value.

"*Vanessa polychloros*.—Mr. Jenner says, 'Local and less common than formerly.' I have scarcely seen this insect in Sussex for thirty years; it was at one time common near Lewes, and my series was taken at Keymer.

"*Melanargia galatea*.—Mr. Jenner says, 'Local, near Lewes (formerly); Firle Beacon.' This is another singular case of the disappearance of a lepidopteron once common near Lewes. At one time it appeared year after year at Oxsettle, near Lewes; I have not seen it there for over forty years. Mr. Auckland notes that this species was taken by him at Plashet Wood, Chailey, and Warningore Wood beginning of June.

"*Pararge egeria*.—'Woods and shady lanes; not common, but generally distributed' (Jenner). This species is yearly becoming rarer. Mr. Stanton Hillman, of Lewes, informs me that he has not seen one for years. In my younger days it was common.

"*Lycana ægon*.—'Local; Brighton, Hayward's Heath, Lewes, Chailey, Tilgate Forest' (Jenner). This insect was common at one time on Cliffe Hill, Lewes. I find in my notes that on June 8th, 1844, I took fifteen. Mr. Auckland notes it as found there during the months of July and August. It has now quite disappeared from that locality; I have not seen it there for at least forty years.

"With this I conclude my notes. As to the causes of the progressive rarity of the seven latter species mentioned I cannot hazard even a conjecture; but I feel tolerably certain that it has not been brought about by the entomologists, although in some instances man may be the cause, owing to the cultivation of the soil and the eradication of the food-plant of the species."

At the close of the paper a long and interesting discussion ensued. Mr. Tugwell said some years since he had taken *Aporia cratægi* at Herne, a village near Herne Bay, in profusion, but it was no longer there. Mr. Chaney said that *A. cratægi*

was at one time very abundant near Rochester, and, in fact, all over the Hundred of Hoo, but disappeared about the year 1871; *Leucophasia sinapis* used also to be common in a wood the other side of Chatham, but after the year 1856 it gradually became scarcer and scarcer, and about the years 1858 or 1859 disappeared altogether. Mr. Carrington thought that there was a general scarcity of butterflies all over the country, and this, in the northern counties at least, he attributed to the severe winter of either 1878 or 1879, when the cold was phenomonally intense, probably killing the insects, which were absent to a great extent afterwards. The discussion was continued by Messrs Tutt, Frohawk, South, Rendall, Sheldon, and others.

February 10th. R. Adkin, Esq., F.E.S., President, in the chair.—Messrs. H. Collings and L. F. Hill were elected members. Among the entomological exhibits Mr. Samuel Stevens brought a remarkable variety of *Vanessa atalanta*, L., and a suffused variety of *V. io*, L.; Mr. R. Adkin, *Spilonota incarnatana*, Hb., bred from larvæ found in shoots of *Rosa rubiginosa*, in the heart of Surrey, forty miles from the coast; Mr. C. A. Briggs, a large number of *Lycæna corydon*, in reference to the paper now appearing in the 'Entomologist' upon the genus *Lycæna*, including dwarfed forms, blue and brown forms of the female, varieties with the spots absent from the under side or in excess of the usual number, and running into streaks; Mr. R. South, species of British and foreign *Lycænidae*, and contributed notes, calling particular attention to a variety of *L. corydon* from Asia Minor, which, as far as he could remember, was similar to the varieties exhibited by Mr. Sabine at the Society's meeting, October 7th, 1886, who had stated that he had seen *L. bellargus* and *L. corydon* in copulâ. This Mr. South said was quite possible, and he was of opinion that this variety was hybrid between the two species referred to. Mr. Hall remarked that he had had an opportunity of examining Mr. Sabine's varieties, and thought they were very similar to the variety now exhibited. Mr. Tutt observed that he thought the specimen referred to was simply a local form of *corydon*. Mr. E. Joy exhibited Lepidoptera from the New Forest. Mr. John T. Carrington read a paper, "Hybernation and Æstivation," upon which a lengthy discussion of a most interesting character took place.—H. W. BARKER, *Hon. Sec.*



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NOTES ON THE GENUS *LYCÆNA*.

By RICHARD SOUTH, F.E.S.

(Continued from p. 52.)

FIRST, a word concerning *Lycæna corydon*. Prof. Blachier, of Geneva, has most kindly informed me that the variety, Pl. I., fig. 1, has been named *lucetia* by M. Garchet ('Annales de la Société entomologique de France, 1877,' bulletin, p. 79). Such a remarkable form is certainly worthy of a distinguishing appellative. Prof. Blachier also mentions a small grizzled (grisâtre) example of *corydon*, which was taken in the Valais, and expands only 27 mm. Mr. C. A. Briggs has British specimens even smaller than this; two (male and female), which he has most courteously shown to me, measure respectively 25 mm. and 22 mm.

PLATE II.

Lycæna icarus, Rott.

alexis, Hüb.

UPPER SURFACE.

Male.—Blue, with either a tinge of violet or mauve, more frequently the latter. The specimens figured, Pl. II., figs. 1, 2, 3, have each a distinct shade of blue: that represented by fig. 1 is from Aberdeenshire, and is blue shot with mauve, while fig. 2 shows a male *icarus*, closely approaching male *bellargus* in colour; and fig. 3 is a decidedly violet specimen. These two last are from Ireland, and were kindly sent me, together with others (to which more particular reference will presently be made), by Mr. Percy Russ, of Cuilleenamore, Sligo. Several of the males

from Sligo exhibit a tendency to the *bellargus* coloration, but the one figured is the most decided. The only other locality from which I have seen similar examples is the Isle of Hoy, but these are not quite so striking as the Sligo specimens, and the *bellargus* colour is mostly confined to the inferior wings. In typical *icarus* the hind margins of all the wings have a linear black border; this in English specimens does not usually attract one's attention, but in Scotch and Irish examples it is sometimes very conspicuous. The nervures are generally pale shining blue, but in some specimens they are dark coloured towards the hind margin of the wings (Pl. II., fig. 1), and in a few instances are continued beyond the marginal border into the fringes, giving to these latter a slightly chequered appearance. There is no discoidal spot on either fore or hind wings, but the discoidal and other ocelli of the under side are often visible from above. In a few of the Sligo specimens there is a distinct row of black spots on the inferior wings internal to the marginal border. These are seen in fig. 3, Pl. II., but in other examples they are large and distinct. Mr. Russ informs me that specimens of male *icarus* with black spots are of constant occurrence in his locality.

Female.—The form of this sex most frequently met with has all the wings brown, tinged with blue at their bases. On the fore wings is a black discoidal spot, and a series of orange crescents internal to a row of black spots on the hind margins. The hind wings have a marginal row of black spots, which are bordered externally with white and internally with orange. Fringes white. One of the most common forms of "blue" female *icarus* (var. *cærulea*) obtained at Ventnor is that figured, Pl. II., fig. 9. Three others from the same locality are, except in size, similar to the Sligo example, Pl. II., fig. 11. Between these two types there are among the Ventnor specimens several most interesting forms. Some of these have the discoidal spot on fore wings surrounded with whitish-blue, and in others the discoidal cell of the inferior wings is closed with a small black dot set in a whitish-blue ring. Others, again, have a whitish-blue triangular streak internal to the third and fourth orange crescents on hind wings. In nearly all these specimens the orange markings of the primaries are either very faint or entirely absent. Some female *icarus* from Pitcaple, Aberdeenshire; and others from Castletown, Co. Cork, Ireland, the latter kindly sent for my inspection by

Mr. Gervase Mathew, are very handsome. The blue, which in these specimens is of a violet tint, suffuses nearly the whole of the wings up to the large and bright orange crescents. These last are almost confluent, and consequently the orange marking appears band-like, as shown in the Scotch example, Pl. II., fig. 6. This particular specimen, however, is only tinged with blue at the bases of the wings, and was figured more especially to show a curious modification of the whitish-blue triangular streak, adverted to above, but which unfortunately does not appear in the colouring.

UNDER SIDE.

Normally the under surface of male *icarus* is pale grey, with a brown tinge on inferior wings; and that of the female pale brown. The ocelli are alike in both sexes, and in their arrangement very similar to those on the under side of *corydon*, referred to (*ante*, p. 5). On the inferior wings a white streak starts from the third and fourth hind-marginal orange crescents, and passes between the fourth and fifth ocelli of the central series.* In several male specimens from Sligo the under side coloration is of a pale fulvous brown (Pl. II., fig. 4), and a few examples of the same sex from Ventnor are of a somewhat similar tint.

With regard to variation in the ocelli, all the leading forms of aberrations noticed in *corydon* (*ante*, p. 5) are found in *icarus*.† The obsolete type, however, is only represented in my collection by the form *icarinus*,‡ Scriba (Pl. II., fig. 4, Sligo; fig. 5, Ventnor). I have taken this aberration in North Devon, Kent, Surrey, and Isle of Wight, and have received it from Scotland and Ireland.§ Among my Ventnor specimens of *icarus* are several examples of the increscent form. In some of these the upper basal spots of the fore wings are elongated, and the lower completely divided; others have four, and one example five,

* Stated to pass between fourth and sixth in *corydon*; but this is only in exceptional cases, where the streak is broad and encloses the fifth ocellus. It usually passes as in *icarus*, between the fourth and fifth ocelli.

† I have seen in collections many interesting under side aberrations, and all, except perhaps sundry deformed examples, belonged to one or other of the principal types adverted to.

‡ Absence of the basal spots on fore wing is the distinguishing character of var. *icarinus*, but in several specimens the last spot of central series has vanished also (Pl. II., fig. 5).

§ Mr. Russ, Sligo; Mr. Mathew, Castletown.

distinct basal spots on each fore wing; and others have an extra ocellus on inner margin of hind wing. Several of the confluent spot aberrations are similar to that of *corydon*, Pl. I., fig. 6; others have the initial spot of basal and central series on hind wings united.

Most of the Scotch and Irish specimens and two from Ventnor have clear discoidal spots on hind wings, and in one Scotch example the discoidal spot of fore wings is also white. The white streak on the hind wings sometimes extends almost to the discoidal cell, as in the Scotch female example figured, Pl. II., fig. 7; and in two Ventnor specimens this streak joins the second basal ocellus. A curious feature* in connection with all the Sligo *icarus* that I have seen, and some of the Scotch examples, is that the hind margins of both fore and hind wings are much paler than English examples. This is particularly noticeable in one of the males from Sligo, the whole of the margins external to the orange crescents being pure white. Fringes of the male are white, as on the upper surface, but of the female pale grey; and the venation of both sexes is dark coloured and distinct on the hind margin. In some examples this dark colour is projected into the fringes (*vide* Pl. II., fig. 7).

English *icarus* varies considerably in the matter of wing expansion. Thus, for instance, I have female specimens from Folkestone, taken early in August, which range from 0.75 in. to 0.85 in. The example figured, Pl. II., fig. 8, but slightly exceeds three-quarters of an inch, while among the Ventnor specimens are males from 1.30 in. to 1.40 in. From a large number of measurements I have taken of both sexes of *icarus*, from various parts of England, I find the average to be—male, 1.20 in.; female, 1.10 in. Both sexes of Irish and Scotch are uniformly larger than English specimens. Some males from Sligo expand 1.50 in.

In my collection are specimens of *icarus* and var. *cærulea* from Thuringia and the neighbourhood of Leipzig, and typical *icarus* and var. *icarinus* from two localities in Switzerland. As regards the upper and under surfaces of the type in each series, I can only say that although the Thuringian males are rather more shaded with mauve than the Swiss examples, all are

* Not clearly shown, I regret to find, in the figure of *icarinus* from Sligo, Pl. II., fig. 4.

eminently typical. The specimens of var. *cærulea* are not so brightly blue as many English examples of this form of the female, and I am given to understand that in Switzerland the females do not often assume the male colour beyond a basal suffusion.

Mr. Gervase Mathew has been good enough to show me examples of *icarus* from Vigo, North-West Spain; and Turkey. The three males from the Spanish locality are of the average size, but are rather darker in tint; the hind-marginal borders are strongly defined, and in one specimen there are indications of dark spots on the margins of hind wings; on the under surface the colour is more like that of typical female than male. The series from Turkey comprises four males and one female. In colour these males are somewhat different to any I have seen from other parts. The tint may be described as pale blue-mauve, but in one example there is a decided shade of the *bellargus* colour on the inferior wings. This specimen has the hind margins of fore wings more rounded than usual. Another example, the smallest of the series, has dark spots on the margins of hind wings. Female of the normal type.

Var. *celina*, Const., from Algeria, is by some entomologists considered a distinct species. I have only a pair of this insect. Male.—Under the average size, of the *bellargus* colour, with a shade of mauve, but in certain lights there is a suspicion of the *eros* tint; marginal borders are black, and a little broader than in typical *icarus*; the nervures black on the hind margins of all the wings, and there are two or three small black spots on margins of hind wings. Fringes white. Female.—Brown, tinged with blue at the bases of the wings; discoidal spot on fore wings large and black; bright orange spots on the hind margins of all wings. Under side.—All the markings quite like those of *icarus*, but bright and distinct; and the female has the extra ocellus on inner margins of hind wings.

Var. *persica*, Bienart. I have not seen an example of this Persian form, but Dr. Lang says* it “has the spots on the under side very small or absent.”

Distribution.—*L. icarus* is found throughout Europe, Northern and Western Asia as far as the Himalayas, and North Africa.

* ‘*Rhopalocera Europæ*,’ p. 143.

Lycæna bellargus, Rott.
adonis, Hüb.

The following observations concerning British examples of this species refer to a long series received from Folkestone, the majority of which were captured and sent to me in September, 1885.

The male of *bellargus*, like the same sex of the two species previously considered, is not constant in tint of upper surface. Some few specimens have a decided shade of mauve in their coloration. The fringes of fore wings of all the specimens are chequered with black, but this character is not clearly expressed in hind wing fringes of a few examples. The black spots on the hind margins of inferior wings are fairly distinct as a rule, but in one or two individuals are not even indicated.

Some of the females received in 1885 are dark brown, with a black discoidal spot on fore wings and deep orange crescents on the hind margins of all the wings of one or two specimens, but on the inferior pairs only of most of the examples. In many cases the crescents are confluent and form a band on the hind wings, but in others, on the contrary, they are very faint. Discoidal spot of primaries, in a few specimens, encircled with whitish-blue. Three examples have a small discoidal spot on hind wings also surrounded with whitish-blue. These last are the only specimens which have distinct discoidal spots on inferior wings. Among many females which have assumed more or less of the male colour are one or two similar to the example figured Plate II., fig. 10, and two others approach the var. *ceronus*, Esp., Plate II., fig. 12,* but lack the orange crescents on fore wings. They are, however, similar to examples of *ceronus* from Magdeburg.

Under side.—The males are very like the same sex of *icarus*, but generally rather darker in colour. The colour and ornamentation of female seems intermediate between *icarus* and *corydon*. Though more closely resembling the former, it may usually be distinguished therefrom by its chequered fringes, whilst from the latter it is separated by its more glossy appearance.

The obsolete, increscent, and confluent phases of aberration are each represented. Nearly all the examples have clear white

* After Dr. Lang's figure of *ceronus*, 'Rhopalocera Europæ,' Plate XXVI., fig. 5. The colours are somewhat brighter than in the original.

discoïdal spots on hind wings, and the white triangle is more or less distinct.

Among some Swiss examples of *bellargus* in my collection is a male from Jura, which is distinctly tinged with mauve. This colour is also noticeable in males from Prussia, and the black spots on the hind margins of inferior wings are rather large. The chequered character of the fringes in one or two examples from the Continent is faint. Most of the females are very typical throughout. The exceptions are examples of *ceronus*, previously adverted to.

In English specimens of *bellargus* the marginal spots, when present at all on the hind wings, vary considerably in size. In some Algerian specimens of the species this character is unusually well developed. The male of this form, known as *punctigera*, when held in a certain position appears to have the colour of *icarus*, and the resemblance to this species is rendered more complete by reason of the nervure-points running into the white fringes in a similar way to that noticed in *icarus*. Only in *punctigera* the black colour is carried through to the tips of the fringes; but it does not, however, form patches as in typical *bellargus*, at least not in my examples.

Var. *polona*, Z., as adverted to when discussing the named varieties of *corydon*, has the typical male colour, but is larger than the type, and has the hind margins somewhat broadly bordered with black. The specific identity of this form depends, more especially perhaps, on the character of its under side ornamentation, which is more like *bellargus* than *corydon*. It is found on mountains in Asia Minor.

In var. *cinnus*, Hüb., 830-1, the spots on the under side of posterior wings are not ocellated.

Distribution. — *L. corydon* occurs in Central and Southern Europe, Western Asia, and North Africa.

Mr. Sabine has been good enough to send me, for examination, some of the curious forms of *bellargus* he took at an inland locality in Kent.* As there may be similar forms in other cabinets it will perhaps be well to give short descriptions of each of these varieties, and also of two others from Folkestone, kindly shown to me by Mr. Sabine.

* Entom. xix. 176, 248.

Taken in June, 1886. Kent:—

No. 1, ♂.—Grey, with a brownish shade and a very faint tinge of blue. Ocelli on hind margins of hind wings faintly indicated. Under side, normal *bellargus*.

No. 2, ♂.—Grey, with pale mauve shade. Fringes faintly chequered with pale grey. Black spots on hind margins of inferior wings indistinct. Under side as in *bellargus*.

No. 3, ♂.—Central area of all wings mauve, with *bellargus*-blue margins. Nervures black on hind margins of fore wings. Black spots on margin of hind wings. Fringes faintly chequered on fore wings, but plain white on hind pair. Under side, normal *bellargus*.

No. 4, ♀.—Pale brown, shot with pale blue at the bases of all the wings; a band-like series of orange crescents on hind margins. Fringes white, with only faint traces of chequers. Under side very like some examples of *icarus* with clear white discoidal spots on hind wings.

No. 5, ♂.—Blue-black, with small black spots on the hind margins, and a dash of brownish colour along the inner margins of hind wings. Nervures black, running through the whitish fringes. Under side.—Fore wing smoky-grey. Hind wing smoky-brown. Spots arranged as in *bellargus*, but enclosed in rings, which are but little paler than the colour of the wing upon which they are placed. The discoidal spot of hind wings is pale, but ill-defined.

Specimens taken in same locality as above, September, 1886:—

No. 6, ♂.—Pale brown, with a faint tinge of blue and indistinct ocelli on the hind margins of all the wings. Under side similar to that of *bellargus*, but the black spots are very small.

No. 7, ♂.—Appears to be *icarus* on the upper surface, with a tinge of *bellargus* colour; but the nervures, which are blackish on hind margins of the wings, run through the fringes. Under side identical with that of *bellargus*.

No. 8, ♀.—Similar on the upper surface to No. 4, but the orange crescents are less distinct on the fore wings. Under side, typical female *icarus*.

Aberration taken near Dover, spring, 1883:—

No. 9, ♂.—Greenish-blue, with a blackish shade or border on hind margins of fore wings, and faint black spots on margins

of hind wings. Fringes of fore wings slightly chequered; those of hind wings plain white. Under side, typical *bellargus*. From the upper side alone it would be difficult to say which species this example should be referred to; but judging by the under side one would suppose it to be a variety of *bellargus*. The colour of the upper surface, although not exactly that of either *corydon* or *bellargus*, has something of each in its composition; the hind-marginal border is suggestive of *corydon*.

Aberration taken at Folkestone, Autumn, 1884:—

No. 10, ♂.—Blue-black, somewhat darker in hue than No. 5. Fringes chequered, dark grey and black. Under side similar to No. 5, but the discoidal spot of hind wings is obliterated.

In the note on *icarus* reference is made to a tendency exhibited by some specimens to assume *bellargus* colour, but such examples are not in any way to be considered as parallel varieties to the aberrations just noted.

That the examples Nos. 1—8 are hybrid, or, perhaps more correctly, mongrel offspring of a union between *icarus* and *bellargus*, there can be little doubt, I think. Believing as I do that *icarus*, *corydon*, and *bellargus* are not pure species, I can readily admit not only the probability of a fertile crossing between *icarus* and *bellargus* or *bellargus* and *corydon*, but the further possibility of the issue of any such crossing being capable of reproduction. Of course mongrels would be fertile, but the chances of their pairing among themselves would be infinitely small compared with the probabilities of union between mongrel and either parent form. We may, therefore, venture to conclude that, under existing circumstances, the mongrel character of the offspring of a chance crossing between *icarus* and *bellargus* would not be reproduced to any extent, but that on the contrary it would soon be lost again in the type form of *bellargus*. Some of the issue of these intercrossings might resume certain long-lost characters, and the blue-black form may be an instance of such reversion.

It has been suggested to me by entomologists who have had much experience with both species in Britain that a union between *bellargus* and *corydon* is not possible, because the first brood of the former has passed away before *corydon* appears, and this last insect has run its course before the second brood of *bellargus* emerges. In my remarks on *corydon*, however, I mentioned that the two

insects had been observed by me, more than once, flying together. The *bellargus* in each instance were of the second brood. Now what has happened at one place may reasonably be expected, under similar conditions, to occur at another place; and I cannot see why *bellargus* should not be contemporary (in certain years) with *corydon* in Kent, as well as in the Isle of Wight.

As far as I know, the sterility of a cross between *bellargus* and *corydon* has not been demonstrated. Have we any proof that the pairing of *icarus* and *bellargus* is, as regards progeny, inoperative?

Lycæna hylas, Esp.
dorylas, Hüb.

“Fringes of all the wings white. Male bright blue, with a narrow brown hind marginal border; along the hind margin of the hind wings is a row of not very distinct brown spots. The female, above, very closely resembles that of *L. icarus*, but the wings are darker brown, the orange band on the fore wings less distinct, and the white marginal fringe broader. Beneath, the wings somewhat resemble those of *L. icarus* var. *icarinus* (the fore wings having no basal spot). It differs, however, in having the orange bands paler and less distinct, in the greater size of the black spots on the fore wings, and in having the discoidal spot on the hind wings white, without any, or with a very minute, central dot.”—‘*Rhopalocera Europæ*,’ p. 122.

Male.—The description of male *hylas*, as given above, applies very well to some Swiss examples of the species in my collection, except perhaps as regards the hind-marginal border and spots; these, I should say, are black rather than brown. In some specimens from the neighbourhood of Vienna the border is brown, but the blue colour of the wings has something of a green tint. One of the Swiss examples is a beautiful “peacock-blue”; this specimen and another from the same locality have no trace of black spots on the margins of hind wings.

Female.—The females from Vienna are dark brown, but not darker than female *icarus* from Saxony, or even some Isle of Wight specimens. The orange crescents on the fore wings of a few examples from Switzerland and Vienna are quite as distinct as in certain English and Swiss *icarus*.

Under surface.—The most striking under side character of *hylas* is the coloration, which varies in the male from pale grey or

whitish to pale brown, and from pale to dark brown in the female. This colour never passes beyond the hind-marginal crescents. The margins of all the wings, external to the crescents, are white, with a row of ill-defined dots. As has been adverted to, the under side of Irish male *icarus* is sometimes pale fulvous brown, and the margins always pale; in some instances even white.

Among my Ventnor *icarus* and var. *icarinus* are specimens with orange markings on the under side paler and less distinct than in any example of *hylas* I have seen. On the other hand, one specimen of *hylas* from Switzerland has the orange crescents on the under side of posterior wings quite as bright, though not quite so large, as in the Irish *icarinus*, figured, Pl. II., fig. 4. With regard to the black spots on the under side of fore wings, Swiss *hylas* has certainly a slight advantage over Irish *icarus*; but some of the examples of *hylas* from Vienna must give way both to Irish and some English *icarus* in this matter. Then the white discoidal spot on the hind wings of *hylas* cannot be considered as a character peculiar to this species, as we find the same thing in most Scotch, Irish, and a few English examples of *icarus*, to say nothing of *bellargus* and *corydon*.

Larva.—The following extracts from Dr. Lang's* descriptions of *hylas* and *icarus* will show how closely similar the larva of the former is to that of the latter, as regards the more prominent characters:—

Hylas.—Head, black; ground colour, dark green; dorsal line, darker green; lateral streaks, yellow.

Icarus.—Head, black; ground colour, green or olive; dorsal line, darker shade; lateral streaks, lightish green.

Dr. Lang says that the larva of *hylas* feeds on the flowers of *Melilotus officinalis*. Mr. Kanet† also gives this plant, and adds trefoil. Looking over a list of plants upon which the larva of *icarus* has been found, or which it has been known to eat in confinement, I note that one or two species of each of the following genera of Leguminosæ are included:—*Ononis*, *Medicago*, *Trifolium*, *Lotus*, *Astragalus*, and *Ornithopus*. Thus we find that both *hylas* and *icarus* affect *Trifolium*; and I think that *icarus* would not object to *Melilotus*. On the other hand, we have no

* 'Rhopalocera Europæ.'

† 'European Butterflies.'

proof that the larva of *hylas* does not feed on *Ononis* or *Lotus*, for instance.

Distribution.—Southern and Central Europe; Asia Minor. Mr. Kane says it is locally abundant in Swiss valleys on limestone formations.

Var. *nivescens*, Kef.—This form of *hylas* is found on limestone mountains in Catalonia and Andalusia. The upper surface colour of the male is silvery grey, with well-defined dark brown hind-marginal borders on fore wings. Hind wings with dark spots, and a narrow border on hind margins. Under side very similar to Swiss examples of the type, but the colour of the fore wings is rather paler, and the hind margins consequently do not contrast so strongly with the rest of the wing. The white streak on hind wings is stripe-like, as in *damon*, but does not show so conspicuously, because of the paler colour of the ground, and the black spots are much smaller than in the type; in one example several of these spots are entirely absent.

The Armenian form, *armena*, Staud., has the fringes somewhat broader than usual, and the spots on the under sides of inferior wings almost entirely eliminated.

Lycæna escheri, Hüb.
agestor, Godt.

“Fringes of all the wings white. The male has the wings blue, tinged with lilac, much resembling *L. icarus* in colour, but rather brighter; all the wings have a very narrow black hind-marginal border. The female is brown, slightly tinged with blue at the base; the fore wings have a black discoidal spot and an orange hind-marginal band indistinctly defined on its inner edge. The hind wings have a sharply (defined) hind-marginal band. Under side very much as in *L. icarus* var. *icarinus* (there being no basal spots); the ground colour is, however, lighter, and the black spots are very large and defined.”—Lang’s ‘*Rhopalocera Europæ*,’ p. 119.

I have only eight examples of male *escheri*, but among this small number there are specimens with a mauve tint, others shaded with violet, and one something like *bellargus* in tint, but tinged, in certain lights, with mauve. One specimen from Evolena has a blackish shade along the hind margins, and one or two others have indistinct spots on hind margins of inferior

wings. The nervures are blackish on the margins of all the wings, but most distinctly so on the posterior pair, where they project more or less into the white fringes. In females from the Simplon there is scarcely a trace of a discoidal spot, no orange markings on the fore wings, and but the slightest vestige of orange on the hind wings; whilst in other female examples from the Valais the orange bands are bright and well-defined.

In some specimens the under side coloration is similar to that of *icarus*, whilst in others it more nearly approaches that of *bellurgus*. The basal ocelli are absent, and in the remaining eyed-spots of some examples the black pupils are very large, but in several others are not a whit larger than the black spots of some Irish *icarus*. The white streak is present, but sometimes, as in the other species previously noted, indistinct.

Larva unknown. An alpine species, occurring in France, Switzerland, Savoy, Piedmont, Spain, and Portugal.

(To be continued.)

ON MELANISM.

By J. JENNER WEIR, F.L.S., F.Z.S., F.E.S.

I HAVE read and carefully studied Mr. Dobrée's very instructive paper on this subject, which appeared in the February number of the 'Entomologist,' pp. 25-28.

So far as my limited knowledge extends there is no connection between the tendency to melanic variation in Lepidoptera and the high latitude they may have been produced in, but, on the contrary, I find that, so far as the Lepidoptera of Russia in Europe are concerned, of the 300 species I have received from the neighbourhood of St. Petersburg, from the late Mr. Field and Mr. Erschoff, none show the slightest melanism. I am, not, however, disposed to think that this point "destroys Lord Walsingham's latest and ingenious theory" on this subject, as Mr. Dobrée states, but modifies it, and confines the phenomenon to the higher latitudes of the British Isles, and to high altitudes.

Lord Walsingham's theory of melanism in Lepidoptera was embodied in his address, as President of the Yorkshire Naturalists'

Union, delivered on March 3rd, 1885, and was commented upon by me in the 'Entomologist' (Entom. xviii. 81-87), to which I beg a reference.

It appears to me that Mr. Dobrée has misunderstood Lord Walsingham's theory of melanism, *viz.*, "that a large expanse of white snow tends to produce it." Such was not my reading of the author's theory in 1885.

I have refreshed my memory and carefully re-read the address, and as I understand the theory put forth, it was, shortly, that the dark coloration of Lepidoptera from both high latitudes and altitudes was of service to them, because in such localities "they require rapidly to take advantage of transient gleams of sunshine" (*vide* page 10 of the Address).

I have myself travelled in the Netherlands, Belgium, France, Germany, Switzerland, the Tyrol, Bohemia, Spain, and Italy, and in all these countries, except in the mountains, I have been struck by the extreme clearness of the atmosphere. In Bohemia, Italy, and Spain I found this to be the case in the greatest degree; in fact in Bohemia I found to my sorrow, one very hot day, that the town I could plainly see and I thought to be but four miles distant was sixteen miles away. In the mountains of Switzerland and the Tyrol the clearness of the atmosphere was nearly as great, but constantly interrupted by dense mists and clouds, and it is precisely in these altitudes that melanism becomes rather the rule than the exception; many of the topomorphic varieties are melanic, and many of the alpine species are very dark; *Pieris rapæ* var. *bryoniæ* may be given as an example of the former, and the male of *Melitea cynthia* of the latter. This uncertain condition of the weather is characteristic of the climate of the British Isles. The result is that our indigenous Lepidoptera are, as a rule, darker in colour than the continental, and the tendency to melanism increases northwards, till it may be said to culminate in the Shetlands.

If I am correct in my views, and I think the facts I have brought forward are in accordance with Mr. Dobrée's, then it follows that, in the British Isles and in the mountains of Europe, it is essential to the imagines of Lepidoptera that they should rapidly take advantage of transient gleams of sunshine, and this, the darkening of their coloration, enables them to do. I have myself seen *Vanessa urticæ* fall helpless in its flight when the sun

passed behind a cloud in spring; and in the wet summer of 1879 the rapidly flying *Argynnis paphia* was easily captured with the fingers, having taken refuge in the brambles when disturbed, because it was unable to fly. If this occurs in the South of England it would be much more likely to occur in the more northern parts of these islands and in the Alps.

In conclusion I cannot but express my admiration of Mr. Dobrée's excellent paper, which is a most valuable addition to the literature of melanism.*

ON THE SEXES OF LEPIDOPTEROUS LARVÆ.

By J. ADOLPHE WENIGER.

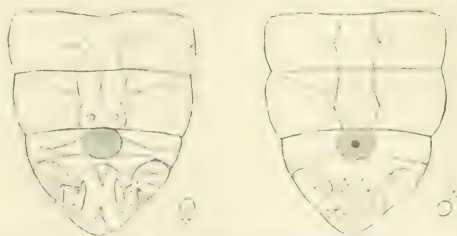
It is during my voyage from England to New Zealand that I am writing the following lines, which I trust will be of interest to entomologists.

Larvæ which produce Lepidoptera have been, up to the present time, a puzzle to entomologists with regard to the sexes. It is said that the lepidopteron while in its larval state has no sex, and that the only means by which an entomologist is able to distinguish the male from the female is by its size. This is not always the sign to go by, for it may be sometimes a large male and a small female. I therefore devoted all the time I could in 1886 to discover if other means could be found for defining the sexes of larvæ. The larvæ on which I have made my experiments were those of *Attacus yama-mai*.

It is not possible to detect the difference before the second or sometimes third change, on account of its being so small, and the larvæ being too tender or delicate to handle. The drawing which accompanies my note, and which is a perfect representation of those I had alive and full grown in April, will be sufficient to enable an entomologist to pick a male larva from the female larva. I may here state that I have known diseases in the female larva, but never in the male. On taking a larva of the above species, or even *pernyi*, *selene*, *cecropia*, &c., and gently taking off the hind part of the larva, turning up the under side, and examining the last segment that bears a spiracle, what is

* Read before the S. Lond. Entom. and Nat. Hist. Soc., February 24th, 1887.

reproduced in the drawing below will be seen by the aid of a good glass. No. 1 is the female: it will be seen that there is a black blotch in the middle of a yellowish tint, and which in natural size is not larger than a large pin's-head. In the male, which is No. 2, it is the same blotch at the same place, but in



SEXES OF LEPIDOPTEROUS LARVÆ.

the middle is a dark green spot, which gives the appearance of a hole: this is only from the internal organs, and is of a liquid substance; for should a larva of each sex be killed and emptied, nothing of the signs will remain. By this means of telling the male from the female, I have no doubt advantage will be gained, as in the case of the Tusser-worm, reported by Claud Dumaine (*Entom.* xix. 110), the female cocoons only being picked for breeding purposes: the female and male could thus be picked within a very short time.

[Having been asked to express an opinion upon Mr. Weniger's communication, I can affirm that the position in which the sexual characters are stated to be is that in which such characters would occur if they were proved to be present. This, in itself, is a strong argument in favour of the accuracy of Mr. Weniger's observation. Nevertheless, I do not think that the characters can be equally marked in all larvæ, for I have frequently examined the large larvæ of *Sphingidæ* in this very area and with this very object in view. It is quite clear that, as Mr. Weniger implies, the markings have not the value of external organs of reproduction, but if their presence is confirmed they will prove to be the blind terminations of the ducts of the sexual glands, which should be found beneath the cuticle at this very spot, as Herold showed, in the case of the larva of *Pieris brassicæ*, towards the beginning of this century. It is unfortunate that so new an observation is not supported by a quotation of the numbers of individuals in which the characters were proved to correspond with the respective sexes. If con-

firmed, the observation will certainly possess all the importance the author claims for it, and it is quite clear that the description is sufficiently well-founded to deserve the most thorough investigation before it can be assumed that the author has been mistaken. This being the case it is in every way advisable that the observation should be rendered public, that the opportunity for confirmation may be taken by the investigation of many species of larvæ during the coming season.—EDWARD B. POULTON.]

LEPIDOPTERA OF SOUTH BUCKINGHAMSHIRE.

BY REV. J. SEYMOUR ST. JOHN.

WHETHER this particular part of the county—on the borders of Middlesex, Herts, and Oxfordshire—has ever been worked entomologically, I know not. Mr. Stainton mentions Halton in his books, which is a good sixteen miles north of my locality (Chalfont St. Peter), as the crow flies. Being within reasonable distance of London, twenty miles from the Marble Arch, and a very likely-looking bit of country,—gravel and chalk soil, with plenty of trees of all kinds, shrubs, undergrowth, common and wood, in good profusion,—it may prove interesting to some readers to know what I have done in the past season of 1886. With not too much time on my hands for entomologising, and the daytime being all occupied, I had to leave the Diurni to themselves. Anyone who could give up his whole time could record, I feel sure, a better bag than myself.

I must content myself on this occasion to give simply the *actual captures* of Macros each month which I made, stating the number of each, except when I took only single specimens of a species, in which case the name only is given without comment.

MAY.—Caught:—*Hepialus hectus* (common), *Hemerophila abruptaria*, *Anticlea nigrofasciaria*, *Coremia unidentaria* (4), *C. ferrugata*, *Selenia bilunaria*, *Eupithecia vulgata* (6), *E. consignata*, *Cidaria suffumata*, *Ligdia adustata*, *Rumia luteolata* (2), *Melanippe fluctuata* (common), *Asthena candidata* (common), *Numeria pulveraria*. At light:—*Plusia gamma*.

JUNE.—Caught:—*Iodis lactearia* (6), *Eupithecia rectangulata* (4), *Ligdia adustata* (3), *Asthena candidata* (common), *A. luteata*, *Bapta temerata*, *Melanippe montanata* (common), *M. unangulata*, *Cabera*

pusaria (2), *Venilia macularia* (common), *Tephrosia punctularia* (7), *Thera simulata* (common), *Bupalus piniaria* (10), *Phibalapteryx tersata* (3), *Zonosoma punctaria*, *Camptogramma bilineata* (abundant), *Rusina tenebrosa*, *Plusia chrysis*, *Euplexia lucipara*, *Habrostola tripartita* (2), *Drepana falcataria* (2). At rest:—*Hecatera serena* (3). At light:—*Spilosoma lubricipeda*, *S. menthastri* (both common), *Noctua festiva* (7), *Mamestra brassicæ* (common), *Phalera bucephala*, *Cidaria fulvata*, *Hadena dentina* (4), *Xylophasia monoglypha*. At sugar:—*Acronycta psi*, *Xylophasia hepatica*, *Grammesia trigrammica*, *Agrotis exclamationis* (common), *Miana strigilis* (2), *Nola cucullatella*.

JULY.—Caught:—*Habrostola tripartita* (3), *Caradrina morpheus*, *Noctua festiva* (common), *Leucania lithargyria* (3), *L. conigera* (7), *Thyatira derasa*, *Hydrocæia nictitans* (common), *Lithosia complanula* (2), *Cidaria fulvata* (common), *C. dotata* (3), *Rumia luteolata* (common), *Acidalia imitaria* (3), *A. holosericeata* (2), *A. virgularia* (2), *A. dimidiata* (5), *A. scutulata* (3), *A. aversata*, *A. remutata*, *A. dilutaria* (2), *Timandra amatoria*, *Metrocampa margaritaria* (2), *Hypsipetes sordidata* (common), *Hemithea strigata*, *Melanthia bicolorata* (2), *Halia vauaria* (2), *Larentia viridaria*, *Selenia bilunaria* v. *juliaria* (2). At light:—*Eupithecia rectangulata* (2), *Scotosia vetulata*, *Leucania comma*, *Rusina tenebrosa*, *Apamea didyma*, *Plusia iota*, *Pterostoma palpina*. At sugar:—*Xylophasia lithoxylea* (3), *X. hepatica* (2), *X. monoglypha* (common), *Hadena thalassina*, *H. oleracea*, *Agrotis exclamationis*, *A. segetum*, *Caradrina quadripunctata* (2), *Noctua augur*, *N. brunnea*, *N. baia*, *Apamea basilinea*, *A. didyma* (common), *Miana strigilis* (6), *M. literosa*, *M. fasciuncula* (6), *M. furuncula*, *Mania maura*, *M. typica* (5), *Amphipyra pyramidea*, *Leucania pallens*, *L. impura*, *Mamestra persicariæ*, *Triphæna pronuba*, *T. ianthina*, *T. interjectaria*, *Erastria fasciana*. At rest:—*Acronycta psi*.

AUGUST.—Caught:—*Coremia unidentaria*, *C. designata*, *Melanthia albicillata*, *Selenia bilunaria* v. *juliaria*, *Cidaria russata* (6), *Crocallis elinguaris*, *Acidalia trigeminata* (2), *A. aversata*, *Melanippe fluctuata* (common), *Eugonia quercinaria*, *Larentia viridaria*, *Eupithecia subfulvata*, *E. centaureata*, *Halia vauaria*, *Scodiona belgiaria*, *Drepana lacertinaria*, *Odonestis potatoria*, *Lithosia complanula* (2), *Mamestra sordida*, *Epunda lichenea*. At light:—*Hepialus sylvanus*, *Habrostola tripartita*, *Neuronis popularis*. At sugar:—*Mania maura* (4), *Calymnia trapezina* (7), *Noctua triangulum*, *N. xanthographa* (common), *N. stigmatica*, *N. c-nigrum*, *N. rhomboidea*, *N. dahlia*, *Polia chi*, *Triphæna comes* (common), *T. interjecta*, *T. pronuba* (common), *T. ianthina* (common), *Miana furuncula* (2), *Mamestra brassicæ*, *Amphipyra tragopogonis* (common), *A. pyramidea* (9), *Xanthia gilvago*, *X. citrigo* (5), *X. cellaris* (2), *X. fulvago*, *Neuronis popularis* (3), *Phlogophora meticulosa* (2), *Catocala nupta* (2).

SEPTEMBER.—At sugar:—*Hadena protea* (common), *Noctua c-nigrum* (6), *Catocala nupta* (common), *Agrotis saucia* (2), *Amphipyra pyramidea* (common), *Phlogophora meticulosa* (4), *Xanthia aurago*, *X. fulvago* (3), *X. circellaris* (common), *Gonoptera libatrix*, *Plusia gamma* (2), *Leucania pallens*, *Anchocelis lunosa* (4), *A. litura* (common), *A. pistacina* (common), *Polia flavicincta* (9), *Cerastis spadicea* (2), *Xylina semibrunnea*, *Thera simulata*, *Cidaria russata*.

OCTOBER.—At sugar:—*Xylina semibrunnea*, *Polia flavicincta* (4). At ivy:—*Orthosia macilenta* (common), *O. lota* (4), *Cerastis vaccinii* (common), *Miselia oxyacanthæ* (4).

I also took a fair number of other *Eupitheciæ* during the season besides those named, which I have not with certainty classified. Larvæ of *Abraxas grossulariata*, *Leucania lithargyria*, and *Porthesia similis* were very common. The season was decidedly a late one. So far I have no reason to be dissatisfied with the products of this neighbourhood. All I have mentioned were taken in this parish, and all those at sugar on half a dozen apple trees in my small garden. I used simply coarse treacle with a little rum, and have never been more successful.

Chalfont St. Peter, Slough, February, 1887.

NOTES ON THE NOTODONTIDÆ.

BY THE REV. BERNARD SMITH.

WITHOUT difficulty there is no interest; and that is why, perhaps, I like the Notodontidæ; for it is a drawer in one's cabinet not easy to fill. Last year we turned up in this district *Notodonta trimacula* (*dodonea*), *N. trepida*, *N. dictæoides*, and some others, which of late had disappeared.

I wish to advocate looking for the ova of this class, not excluding, of course, the young larvæ. Without this course we should hardly find the maple Prominents, *Ptilophora plumigera* and *Lophopteryx cuculla*; at least this was the way I found them; and, as I feel dissatisfied at so few being found elsewhere, I propose to furnish some particulars which may lead to their discovery. First, about *P. plumigera*, as I believe myself to have turned up this insect here about 1854, after it had not been taken in England for some fifty years, I have pleasure in recording

a few of the habits of this little Prominent. The eggs are laid in November on the slender twigs of the common maple, mostly singly, or two or three together, often near a bud. They may be found chiefly in hedges, that are open and not shaded by trees, by looking when the sun shines; and where one is found, others may be expected near. Most are found in March, owing to the weather being brighter then, and some early in April, if the buds are not too much swollen. The eggs do not hatch in nature till early in May. In confinement the eggs must be kept in a very cool place, and will even then hatch about April 17th to 25th, in most cases. The egg is a light umber-brown, with a white base; it looks glazed through a lens. Some are lighter in colour, and still are fertile. If you have not maple or sycamore trained against a south wall, young seedling sycamores may be found at the bottom of hedges in early leaf. The larva will feed well on sycamore and Norway maple, as well as *Acer campestre*. The young larva is very helpless, and often fails to find its food.

The larvæ may be found about the end of May on the sunny side of maples, but less easily than the eggs. They are full-fed early in June, and bury often two inches deep in sandy mould pressed rather firmly. The pupa, which hangs in its cocoon like a clapper in a bell, should not be disturbed. The larva is quiet and gentle, like the perfect insect, and has nothing cannibal in its nature. Others have praised the genus *Eupithecia* as pleasant to rear, but give me *Ptilophora plumigera*. I have taken the eggs in Buckinghamshire, Berkshire, and Oxfordshire on the chalk; and have known the moth taken in Hampshire, and at Great Malvern in Gloucestershire.

The time of the insect's appearance is mid-November, in mild foggy weather. The circumstance which first led me to search for the eggs was that about thirty specimens of the moth were brought me from the lamps, by the man who extinguished them about midnight, one November. These were males; but one female, taken on a foggy night, enabled me to identify the eggs when found afterwards on a twig of maple.

Plumigera comes out usually in a burst, males and females together, which makes it more easy to secure fertile ova. They pair usually about 7 p.m., and for about an hour. One female can lay about 150 ova, but in confinement half this number is above the average. I have found ova more than twice the usual

size, but rarely. This fact suggests that the species varies in size, as it does in tint.

Three varieties of the male imago are known to me. These I shall call—*flavescens*, the lightest; *nigricans*, the darkest; and *unicolor*, having the fore wing uniform in tint, as in the female. The shade of the female is also very various. One variety is a light chestnut, reminding one of a Highland *castanea* (*neglecta*) var. *lævis*.

The moth usually emerges about noon, and the wings are hardly dry by the evening. It is better to keep them twenty-four hours. The males should be killed quickly, to preserve the antennæ in good form. I use bruised laurels and chloroform for this purpose. They may be left in this for twenty-four hours.

Marlow, Bucks, March 7, 1887.

ON COLLECTIONS OF LEPIDOPTERA.

By F. H. PERRY COSTE.

SOME time ago the Editor of the 'Entomologist,' in reviewing Mr. C. Roberts's 'Naturalist's Diary,' indicated that the province of the collector may be exhausted in a few years; that of the observer, never. Mr. Roberts, in the book in question, remarks, in substance, that the methods of naturalists have of late years undergone a change, and collections are less regarded than they were by the older naturalists.

These remarks may serve to introduce a subject which has somewhat attracted my attention lately, causing me, for my own satisfaction and information, to seek the advice of several well-known entomologists and collectors. These gentlemen, to all of whom I was utterly unknown, answered my enquiries in the kindest manner, and I intend presently to quote one or two passages from their letters, in order to illustrate my subject the better. Lest I be misunderstood, and thought to write dogmatically, let me say at once that I have written this article in the hope of raising in these pages a discussion, and of eliciting the opinions of various readers of the 'Entomologist.' I cannot doubt that such ventilation of the question would be as interesting and serviceable to others as to myself.

What is the logical *raison d'être* of a collection of Lepidoptera? of what educational value is such a collection? and, looked at from an educational and scientific standpoint, is the game worth the candle? Most men being engaged during the greater part of the day in business, the amount of time at their disposal is limited; whilst what time is available for scientific culture is necessarily still more limited. Looking at the subject from this point of view, it occurs to me that the time devoted to making a mere collection of Lepidoptera is very inadequately remunerated by scientific knowledge. Like so many others I commenced collecting as a boy, and at first for the mere sake of collecting. Gradually I evolved an interest in Entomology itself, while as I grew older, and became more sensible of the value of time, and also came to have less leisure, I began to seek in my own mind for the justification of collecting, and to enquire how to study a collection or how to use it as a *means* to knowledge. Of course everyone must admit that some collections are necessary: we should have perfect collections in museums for reference, for purposes of classification, and for the information of naturalists generally. Again, in the early days of Entomology no doubt collections greatly contributed to the advance of a knowledge of the science; and if we desire to study the entomology of some newly-discovered country, a typical collection of its insects would be eminently necessary and useful.

My argument is this:—Now that English Lepidoptera are so well known and described, and typical collections located in various museums, might not the many hundreds of amateur entomologists derive far more pleasure, information, and scientific knowledge from the study of Lepidoptera otherwise pursued than they do from making collections as at present? It is obvious that these considerations are inapplicable to those who look on their collections as the end of the entomologist. Somebody has somewhere well described man as a “collecting animal”: those who look upon collecting simply from the collector's standpoint may be left to the enjoyment of their delightful—and of course to a great degree instructive—recreation. I am addressing myself to those who look upon a collection simply as a means to scientific knowledge; and my question is—Are these means to an adequate degree productive of the required end? I am not for a moment denying that much may be learned from a

collection: the colouring, markings, variations, classification, &c., may be studied; but then individual collections are not indispensable for these purposes, which would be served by visits to a museum, and to a lesser degree by examining coloured drawings. Even should we admit the usefulness of private collections for these purposes,—considering the large amount of time that is spent in the catching, setting, and exchanging insects,—would it not be better and more truly economical to buy a typical outline collection? One of my correspondents, in an exceedingly kind letter, well put the matter thus:—"With regard to the educational value of a collection of Lepidoptera, I don't think it is worth the time that we spend on it. If there were no setting, but only the collecting and arrangement, it might be; but the time spent on setting is, to my mind, wasted educationally. To men of little leisure, and who do not treat the matter as a recreation and a change from their ordinary labour, I don't think the game is worth the candle."

Such, I may say, is a view that—I own against my will—has to a great extent forced itself on my mind. I should add, however, that another correspondent, well known in the entomological world, wrote:—"A museum, I think, does not teach a man so much as his own private collection. The attention claimed by setting the insects must make one see things more definitely."

Lest I be blamed for my suggestion that a collection might be bought, and be told that I am slighting field-work, let me say that field-work, which is carried on simultaneously with our constitutional walks, and adds so greatly to the charms of a country ramble, is in no way the loss of time setting is. Again, with less collecting and setting the entomologist would have more time available for breeding the various species; and, thinking less of his cabinet and more of Entomology, would feel disposed to take Dr. Knaggs' advice when he says that insects caught, instead of being at once killed and set for the cabinet, should rather be kept alive and allowed to breed, thereby affording us the means of studying the whole life-history of the species.

I should still advocate the collecting of insects by boys: their time is less valuable, they find it a delightful amusement, and learn to know all our commoner insects, their haunts, and their classification; whilst, as they grow older, they slide gradually from

collecting into scientific entomology. Herbert Spencer says:—The practice of breeding larvæ, “when joined with the entomological collection, adds immense interest to Saturday afternoon rambles, and forms an admirable introduction to the study of physiology.”

15, Bruce Grove, Tottenham, February 11, 1887.

COLLECTING BRITISH CLEAR-WINGED LEPIDOPTERA.

BY JOHN T. CARRINGTON, F.L.S.

ALTHOUGH much of what I am about to write may not be novel to some of my readers, there may be somewhat therein which will arouse more than a passing interest in this group of beautiful and interesting moths.

Those who have not yet turned their attention to the study of our “clear-wings” need not fear the difficulty which reputedly surrounds the collecting of these insects, as one or other of them may be found in almost every neighbourhood throughout our islands. If we go through half a dozen average collections of British Lepidoptera we are pretty sure to find the Sesiidæ sparsely represented, and as often as not passed over with some remark about being “hard to get.” It is with the object of lessening this difficulty and increasing an interest in the group that I venture to pen this article. We may first premise that—in the ordinary sense—there are no rare moths; that is to say, we have only to know something of the life-histories and habitats of our rarities to be able to obtain our series, and, may be, further knowledge in their collection.

All the clear-wings are lovers of bright warm sunlight, and it is only in sunny places where we may expect to find them in any stage of their metamorphosis. This habit must be remembered when rearing them, for it is necessary to keep the pupæ in such situation that the moths may have the advantage of the warm early-morning sunshine to bring them out of the pupæ. The opposite effect of the sunshine must, however, be avoided by occasional damping of the cage, otherwise they would dry up before turning to imagines, drought and darkness being alike fatal to most of them; neither must the moths be left in the cage

long after emergence, or they will become sadly injured by a wild flight so long as the sun rests on their prison.

In a state of nature the clear-wings emerge early in the morning. No sooner have the night dews disappeared and "the world become aired," on a bright sunny day in May or June, than out come these gems of nature and rapidly dry their wings. This drying process is, in some species, executed with surprising haste; indeed little more than a shake or two, if there be a slight breeze in the air, seems sufficient to unfurl wings that are ready for flight. So the collector of Sesiidæ, if he would get fine fresh specimens, must be up and about in the early morning; when he will get—if no clear-wings—health and enjoyment of Nature in her freshest mood.

There is still much to be learned from the study of the life-history of the Sesiidæ; for example, how many lepidopterologists are there who know that, like some of the large Bombyces, the virgin females have the happy power of causing the assembling of numbers of males, which easily become prey to the dexterous lepidopterist? I am so informed by my friend Mr. Tugwell, who has by this means obtained males of at least one of the genus *Sesia*; therefore we may expect females of other species of the family to possess the same attractive faculty. This means of working for clear-wings is well worth trial, and the results will be interesting when recorded.

As two moths of the genus *Macroglossa*, in this country, have clear wings as well as the Sesiidæ, it is only fair to mention them, and, as in the arrangement of our Lepidoptera they come first, we will take them before those which possess larvæ so different in character. Both these moths occur in May,—*M. fuciformis* being chiefly southern in its distribution, while *M. bombylifformis* is more northern and western. They appear to cross each other in places, for in some localities both occur, though one or other more frequently than the other as we go farther north or south.

Macroglossa fuciformis is by no means uncommon in some open woods in Kent, Sussex and Surrey. The moths are particularly fond of hovering over patches of common bugle (*Ajuga reptans*), darting their flexible tongues into the purple flowers. They are not easy to take, for the flight is rapid and the moths very timid. Another attraction are the great trusses of

handsome flowers of the rhododendrons, now so commonly planted in some woodlands as a winter cover for game, which find shelter under the evergreen leaves. It is a beautiful sight to see a couple of these active insects hovering around a bunch of the pink flowers on a bright May morning.

The larvæ of this and the next species are Sphinx-like, having a little "tail-" or "horn-like" process on the anal segment. The food plant, honeysuckle, occurs almost everywhere, but the trailing sprays in sunny woodlands are the favourite feeding-places. About the middle of July and on into August, gently turn the sprays over and examine the under side of the leaves, and if present the larvæ will soon be detected. Newman, in 'British Moths,' mentions several other plants as food, such as *Knautia arvensis*, *Galium verum*, *Lychnis*, &c. I cannot confirm any of these as natural foods of this species—honeysuckle being the shrub generally affected in this country; and they appear to feed readily on any cultivated variety of *Lonicera*. The colour is lively green, with dark yellow subdorsal line. The horn is brownish at the tip.

Macroglossa bombylifformis occurs in open meadows near woods, heathy tracts by the sides of woods, and very open glades by woodlands. It used to appear in our text-books as the commoner of the two species; this was either a mistake or times and conditions have changed with this moth, for it is not so now. On one occasion only did I ever see this moth in anything like numbers, and that was under special circumstances. While driving from Roundwood to the Seven Churches, by Glendalough, County Wicklow, in Ireland, with my friend Mr. A. G. More, we stopped as we crossed the bridge which spans the little trout stream connecting Loughs Dan and Luggala,—he to play with artificial flies and brown trout; I, with my net, among the natural flies. The day was very cloudy and heavy, but hot. Much to my astonishment, on entering the meadows by the river side, I found a specimen of *M. bombylifformis* slowly hovering over a plant of red rattle (*Pedicularis palustris*), which was with the insect duly netted; for experience had taught me in Yorkshire, that striking sideways was useless in capturing this fast-flying moth. Always strike down while it hovers over the flower, and then lift the bottom of the net and it will flutter upwards. Further search, during the hour or so we

had at our disposal, secured some twenty or thirty specimens in lovely condition. Lousewort flowers (*P. sylvatica*) are much frequented by these moths. Ireland seems to be more favoured than Great Britain by this moth, for I note (Entom. v. 81) the late Mr. Edwin Birchall records its capture somewhat abundantly in Connemara in 1869, by the Hon. Emily Lawless, who found fresh specimens in May, worn ones in June, and other fresh specimens in July. There seems, in this instance, to have been a retarded development for some reason. Inverurie, in Scotland, has also been given as a locality (Entom. v. 349). Nearer London, Newbury, in Berkshire, has been mentioned (Entom. xvi. 209) by Mr. Sladen, who took a dozen in May, 1883, at flowers of lousewort (*Pedicularis sylvatica*).

The larva has been found upon the under sides of devil's-bit scabious (*Scabiosa succisa*), and, like its neighbour last mentioned, it also has a tail or horn on the anal segment. The general colour of the larva is dark green, with large spiracular pinkish spots or dashes. It feeds in July, and is well worthy of search. I should think that if a plant of scabious were placed in a large flowerpot, covered by a large-sized bell-glass, in the morning sun, the females of *M. bombyliiformis* might be induced to deposit ova, which if reared into imagines would be of great interest, for it is said that before the wings are dry they are thickly coated by scales, which shake off at the time of the first flight. This seems a very suggestive process in the natural history of these fast-flying moths.

Trochilium apiformis.—This moth is more southern in distribution than the following species, and appears in June and July in wooded districts. They are best found by searching for the newly-emerged imagines. The instructions given for taking those of *T. craboniformis* may be followed, though of the two species this one is less active than the next.

The larvæ feed in the solid wood of poplar and aspen for two years. The mines are generally just above the ground and below it into the roots. Woodcutters in spring expose larvæ of all ages, which can otherwise be traced by the sawdust-like frass thrown from the holes bored by the grubs. A curious instance of these larvæ adapting themselves to their surrounding circumstances is mentioned (Entom. vi. 79), where some ova, deposited by a female in June upon the setting-board on which it was left

to dry, hatched, and in the following January were discovered apparently healthily feeding on the cork setting-board, which was riddled by the little caterpillars. The larvæ generally pupate near the exit of their gallery, but sometimes come out and go beneath the earth outside, about the end of May. As the moth emerges, the pupæ push themselves partly out of the cocoon.

Trochilium craboniformis (*bembeciformis*).—The moths of this species usually emerge in June or early in July, quite early in the morning, soon after the sun has gained some power. The males take a very short time to dry sufficiently for flight, but may be found drying their wings immediately over the empty pupa-cases, which are to be seen sticking out of the end of the hole bored by the larva in the solid wood of the trees on which they feed. Females are not quite so active, and may be found as late as seven or eight o'clock in the morning; often *in copulâ* with a male before the wings of either are quite dry enough to take flight. Willows and osiers are said to be the standard food of the larvæ of *T. craboniformis*; but as it happens, I have only taken imagines on young Lombardy poplars. Several such trees near Birkenhead produced a fine series in three or four mornings' work. Mr. Gregson, of Liverpool (Entom. xiii. 137), in an interesting article on this moth, says that in South Lancashire and Cheshire the growers of black poplars (*Populus nigra*) sustain great loss from the ravages of the larvæ of this species, which feed for two seasons in the larval state, three or four generations usually killing the trees in the course of six or eight years. Osier beds in the same district also suffer to a considerable extent. It has been said (Entom. v. 380) that by following woodcutters in spring, cut stems of willow containing these larvæ may be found in sufficient numbers to repay for the time and gratuity necessary to secure them. This I have seen myself, though I have never tried to secure the larva, which in one instance was common and apparently destructive. On March 23rd, 1883, Mr. W. Tristram says (Entom. xvii. 19): "Having heard that labourers were cutting an osier bed belonging to the Leicester Corporation, I obtained the kind permission of the town surveyor, and with the assistance of a friend and my saw I obtained upward of 150 sticks, with nearly full-fed larvæ of *bembeciformis* in them. Not having room for all, I sent the greater number to friends. The results of those I retained

were as follows: out of twenty-four pupæ carefully taken on May 14th from the sticks, I only obtained nine imagines; out of these two were crippled, and the others were not of bright colour. Out of twenty-four sticks placed in a cage with holes downwards, and covered in two inches of sand, I obtained twenty-three perfect specimens and but one cripple. These emerged during June from 6th to 16th. . . . I may say that in no instance did the larvæ reach more than ten inches in the sticks from the root." It is also said that this larva frequently feeds in stems of willow and sallow, so thin that it could not be believed to inhabit so small a space.

Sciapteron tabaniformis (= *asiliformis* = *vespiforme*). — This moth has occurred so rarely in this country that it can hardly be considered a British species. It is said to occur in June, and the larvæ feed upon the roots of aspen and poplars.

Sesia scoliiformis. — To obtain the specimens of this moth as they emerge from pupæ, means rising by dawn of day, and watching closely the trees known to be affected by this species. I have in two localities seen such trees, which were in each case large, old, rough-barked birches. The one was in the wood, on the right of the river, about a mile or so west of Llangollen. They were the same trees that were worked by Ashworth, Greening, Gregson, and Cooke. It was the latter who showed me the spot; but although we worked hard on several mornings, we saw no trace of the moths nearer than one or two pupa-cases protruding from the little holes in the bark from which they had emerged. The other locality was at the very top of the Black-wood of Rannoch, where there are many such trees affected. There, too, I saw in another season empty pupa-cases, but failed to get the moths. They have a curious habit, Mr. Cooke told me, of jumping backwards before taking flight when disturbed, which habit Mr. Birchall told me also obtained with *S. musciformis*. Many were the means tried to secure these "skittish" moths by the old set of Lancashire entomologists, such as tacking leno-netting round the trees; but little was the result. Of course we have all read the poem upon the wicked (!) collectors who were supposed to have cut down the trees, and carted them all the way—a long way too—home, so as to breed the moths. I saw some of those trees in the garden of one of the vigorous collectors, but he assured me that the trees were cut

down before they were purchased. He, at least, was not a man to kill geese for golden eggs.

Full-fed larvæ have been cut out of the bark at Llangollen in the middle of May, and the moths usually appear on sunny mornings in June. There is reason to believe that the larvæ feed for two years. Either some one knows "how to take" *scoliiformis*, or else they are "commoner on the Continent," for I have seen quite a nice series—for sale—within recent times. Continental clear-wings differ little from their British relations.

Sesia sphegiformis. — I have seen traces of this moth in Sussex, Staffordshire, Yorkshire, Wales, and Ireland, so that it is doubtless more generally distributed than is supposed. The moths appear in June, and frequent the neighbourhood of alders in woods.

The larvæ feed in the solid wood of the stems of young alder trees and the boles of older trees. To find the larvæ or pupæ of this species it is best to work young trees of alder that will readily bend over, when, if present, the bark will crack over the orifice of the mine, disclosing the larvæ inside. Arranging for their collection by woodcutters in spring was successful in Yorkshire one season, and the sticks found to be bored were placed in a damp box in a sunny situation. A few moths came out, and appeared in due course on the white muslin covering.

Sesia andreniformis (*allantiformis*).—These moths are counted amongst the rarer of British Lepidoptera, though I believe, if properly looked for, they will be more frequently found than hitherto. They occur in July, and have been taken chiefly in Kent, but there are notices of their being taken in Hertfordshire and Gloucestershire. On the Continent the moths are found feeding upon flowers of privet, in some places commonly. I saw, but failed to capture, a fine specimen which was crawling over a truss of privet bloom near Gravesend, a couple of years ago; and I am persuaded that if those flowers were worked for this moth, on bright sunny days, the results would be satisfactory, in localities where the food of the larvæ grows.

I am not aware that the larvæ have been taken in this country; they are said to feed upon dogwood (*Cornus sanguinea*).

Sesia tipuliformis. — This species may be studied by the collector in the most suburban of localities. One need only go

into one's kitchen garden, where the currant trees grow, to conduct the observations. The moths may be seen sunning themselves on the bright leaves of the bushes, or flitting over them on a sunny June morning.

The larvæ feed in the stems of the shoots, probably for two years. Mr. Newstead, writing (*Entom.* xix. 90), says the larva should be looked for in March and April. "Select black, red and white currant bushes, that are pruned every year. Take shoots that were cut in January and February of the previous year, carefully split them open, and the larvæ will be found in the winter cocoon, not far from the end of the shoots." When the larvæ are full fed they gnaw the wood at right angles, and pupate close to the exit. This is usually just above the joint of a small twig, or where a leaf joins the twig. They leave only the finest paper-like film of the outer bark, through which the pupa pushes just before the moth emerges. These moths are not difficult to rear, if the larvæ or pupæ are taken in May. The twigs must be kept standing in moist sand in a sunny place.

Sesia asiliformis (*cynipiformis*).—This moth appears in June or early in July. It frequents localities where oak trees grow, and in some seasons is by no means uncommon in Hyde Park, London. The best way to rear this species is to proceed to an oak wood where the trees have been cut down some two or three years. Indications of the larvæ will be found by looking for the frass thrown up where the bark joins the wood on the top of the cut stumps. It is most common in the South of England.

The larvæ feed in the bark of oak for two years. The female moths prefer the cut trees, depositing the ova on the top of the cut section of bark. The simplest way is to cut off, with a saw, about four inches deep of the top of the stump containing the larvæ or pupæ, and keep these slices in a sunny, moist breeding-cage. The pupæ are then easily reared to imagines. The best time to cut off these slices is about the middle to end of May. Sometimes a single stump will produce quite a long series of the moths a fortnight later.

Sesia myopiformis.—This is another "domestic" species, to be found in the bark of apple and pear trees, as it emerges in June and July.

The larvæ feed in the bark for two years. Try to entrap them by tacking some leno-muslin over trees known to be affected, but

take care there are no small holes left for the imagines to creep out.

Sesia culiciformis.—This handsome species is out on the wing in May and June in birch woods. I have taken it in Perthshire, in Wales, in Yorkshire, and at intervals all over the South of England. The instructions for collecting *Sesia asiliformis*, given above, apply also to this species, excepting that the tops of birch stumps are to be taken instead of oak, and a fortnight or more earlier. It is common in Tilgate Forest, Sussex, and many other localities nearer London.

Sesia formiciformis.—The moths fly in the neighbourhood of osier beds in July. I have seen this species in Yorkshire, Derbyshire, and more commonly in the Thames Valley.

The larvæ feed in the inner stems of osiers, and pupate therein early in July. Saw off the tops of osier stumps about that period, and breed the moths in the same way as *S. culiciformis*.

Sesia ichneumoniformis.—To find this species, hunt about the middle to end of July on sunny days over warm banks where *Lotus corniculatus* grows, especially by the sea-side. I have found it near Southend, Essex, and all along the south coast.

The larvæ feed in the leading roots of the food-plant, and are readily traced by the light brown frass being seen at the crown of the root. The best way is to look for sickly plants, as the first indication. Carefully avoid the infested roots becoming too dry in the breeding-cage, and allow free access of morning sunshine.

Sesia musciformis (*philanthiformis*).—This moth seems generally distributed around our south-western and western coasts. I have found traces of it in Devonshire, Cornwall, near Aberystwith and in Carnarvonshire in Wales, Isle of Man, and Ireland. The moths fly at the end of June over sea-cliffs, where the common thrift or sea-pink grows.

The larvæ feed in the roots and crowns of the sea-pink, and are easily found, as they slightly discolour the plants. I have noticed that the little stunted plants growing in exposed positions are most affected. The moths are easily reared, if the plants containing the pupæ are treated to morning sunshine while in the breeding-cages.

Sesia chrysidiformis.—I have not had an opportunity of collecting this species in any stage, so I cannot do better than

quote Mr. J. Russell, who gave an interesting account of taking the larvæ of this species in 1871 (Entom. vi. 170). He says that on April 1st he took a good supply of full-fed larvæ in the now partly-lost Warren at Folkestone. Mr. Russell says:—"Proceeding along the slopes of the surface of the cliffs, I select those plants of dock or sorrel which have a sickly appearance or stunted growth; I then dig up the roots and gently remove the surrounding mould, being very careful not to damage the larvæ, whose presence is easily discovered by the mines and frass. If the root selected does not contain any larvæ I replant it, in anticipation of a future visit. Before leaving the spot I collect a small portion of chalky soil for future use. On arriving home I transfer the roots containing the larvæ to the breeding-cage. This latter greatly resembles a fern-case: it has glass sides and ends, and the top is covered with a sheet of perforated zinc; the bottom is loosely filled with a mixture of silver-sand and the calcareous soil of the Warren. In this the roots are planted, watered from time to time, and freely exposed to the rays of the sun. . . . At the end of May or beginning of June the imagos appear, leaving the pupa-cases projecting from the top of the tubes sent up by the larvæ. I have not obtained any more moths in the second season from the same plants." This species should be looked for on sea-cliffs all along the south coast. There are not many localities mentioned for it, but that is no reason why others should not be found, if similar localities to those known as its habitat, upon the Kentish coast.

As the season for obtaining all these moths is at hand, I trust these remarks may lead to the record in the 'Entomologist' of many notes and captures of British clear-wings.

Savage Club, London, W.C., March 7, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

RETARDED EMERGENCE OF *PAPILIO MACHAON*. — Seeing the note by Mr. Chitty on retardation in *Euchloë cardamines*, and as such an occurrence is supposed to be rare among butterflies, I am reminded of a case of retarded emergence of *Papilio machaon*. On August 19th, 1884, being on Wicken Fen for a

short time, I collected three larvæ of this insect. Two of these produced imagos in 1885. The third pupa, which I had supposed to be dead, produced an imago—unfortunately crippled—on June 12th, 1886.—J. H. A. JENNER; 4, East Street, Lewes, March 4, 1887.

RETARDED EMERGENCE OF *EUCHLOË CARDAMINES*.—Since my last note to you on this subject, I have chanced upon the following lines in the 'Addenda et Corrigenda' of Stephens' *Haustellata*, vol. i. (1828), which perhaps will prove of interest to some of your readers:—"Of six pupæ of this species (*E. cardamines*) . . . two came to perfection at the end of May, one in the beginning and one at the end of June, the other towards the middle of July, thus accounting for the long continuance of the insect in the final state." So the "much damaged specimen," taken by Mr. Field last August (*Entom.* xix. 247), may possibly have been a late member of the usual spring brood. A second or autumn brood does, however, very rarely occur, as Mr. Haylock points out (*Entom.* 63). Another notice of such an occurrence I have found to-day in the '*Entomologist*' for Oct. 1865 (vol. ii. p. 293), where Edward Newman puts it down to "the exceptional weather," which was, I presume, the cause of the re-appearance of *E. cardamines*, as it certainly was of the second bloom of the horse chestnut and many fruit trees in the South of England last autumn.—H. CHITTY; 33, Queen's Gate Gardens, S.W., March 6, 1887.

ANOSIA PLEXIPPUS, L. (*Danaï archippus*, F.) IN PORTUGAL.—In a letter just received from Mr. George D. Tait, of Oporto, the writer records the capture, on September 29th last, of a female specimen of this species in his garden at Oporto. Although upwards of a dozen specimens of this butterfly are reported as having been caught in South Wales, Cornwall, Devonshire, Dorsetshire, Hampshire, the Isle of Wight, Sussex, and Kent, I am only aware of the record of the capture of two other specimens on the continent of Europe, viz., one in La Vendée, in September, 1877, by Mons. Grassal; and the other at Gibraltar, in October, 1886, by Commander Cochrane, R.N.—H. GOSS; Berrylands, Surbiton Hill, March 12, 1887.

LYCÆNA ICARUS HERMAPHRODITE (?)—Having noticed that you seem to question my statement (*Entom.* 40) concerning the

capture of a hermaphrodite, *Lycæna icarus* I enclose a drawing of the insect. Among those who have seen it, I may mention Mr. J. A. Clark, Mr. T. Eedle, and a gentleman at South Kensington Natural History Museum, whom I believe to be Mr. W. F. Kirby.—M. CAMERON; 102, Clarence Road, Clapton, E.

[The description of Mr. Cameron's specimen of *Lycæna icarus* suggested rather a partial reversion to an ancestral form of the male than an example of hermaphroditism, and for this reason a query was appended after the word "hermaphrodite." However, if Mr. Kirby has seen the insect, he has no doubt pronounced it to be a hermaphrodite only after careful examination of the proper organs. At the same time I may remark that the coloured drawing sent by Mr. Cameron represents a male *L. icarus*, that is as regards the structure of wings. As sexual characters, the coloration and markings of an insect are of secondary importance only. A male may consequently possess some of the colour and ornamentation peculiar to the female, or, as is more frequently the case, especially in the genus *Lycæna*, a female may assume the colour of the male, without any concomitant change in the primary sexual character, or organs of reproduction being effected.—R. S.]

HESPERIA ACTEON, &c., IN SOUTH DEVON.—In August, I took about thirty beautiful specimens of *Leucophasia sinapis*, flying from the foot to half the height of the cliffs. They were very numerous; I only caught those which would insist on my doing so: with them were a few *Hesperia actæon*. Only one *Colias edusa*, and one *Vanessa cardui* were noticed. *Epinephele tithonus* was very abundant, and I took a pale, almost white, aberration of this butterfly. These were all taken casually, as I was only on the look out for Hymenoptera.—R. C. L. PERKINS, Sopworth Rectory, Chippenham, Feb. 28.

NOTES ON NEW ZEALAND LEPIDOPTERA.—During the last summer a new butterfly has appeared in New Zealand, viz., *Vanessa (Junonia) vellida*. On December 26th I captured four specimens of this insect on the beach near Porirua, about thirteen miles from Wellington, up the west coast; and on revisiting the same locality on the 27th I captured another. All these were very much worn, and were restricted to a spot

on the beach only a few yards in extent. Last week, while collecting at Wainuiomata, about ten miles inland, on the east coast, I again met with the stranger, taking this time two fresh specimens, which points strongly to the fact that the insect is a veritable native. I was also much astonished to capture a specimen of the well-known *Deiopeia pulchella*, flying wildly in the hot sunshine round some bushes in the same locality. The Australasian form of *Vanessa cardui* was also more abundant than I have seen it since my arrival in New Zealand in 1881. — G. V. HUDSON; Ghwynee Street, Wellington, New Zealand, Feb. 8th, 1887.

DEILEPHILA EUPHORBIE IN CHESHIRE. — From information which I have lately obtained I have a doubt about the specimen of *D. euphorbie* recorded from Cheshire (Entom. xix. 250), being British: consequently I have taken it out of my collection, and intend to destroy it. I am sorry it was recorded in the 'Entomologist.' — JOSEPH CHAPPELL; 29, Welbeck Street, Chorlton-on-Medlock, Manchester, Feb. 11, 1887.

SESIA ANDRENIFORMIS IN GLOUCESTERSHIRE. — I took a single male of a "clearwing," which seems referable to *Sesia andreniformis*, at Wotton-under-Edge, at the end of last June. Being in quest of Aculeate Hymenoptera, and mistaking it at first for a species of *Odynerus*, it was speedily captured. It was flying up and down some bushes of dog-wood. Unfortunately it is not in very good condition, the anal tuft being considerably rubbed off, due, no doubt, to my not having a suitable receptacle for Lepidoptera with me. — R. C. L. PERKINS; Sopworth Rectory, Chippenham, Feb. 28, 1887.

ZEUZERA PYRINA FEEDING IN BIRCH-WOOD. — I took the larva of *Zeuzera pyrina* (*æsculi*) in a very small birch tree on March 8th, in our garden in London. It was killed in getting it out. The tree was nearly destroyed by this one grub. It had eaten the pith out from top to nearly the bottom. Could any one tell me if they have been found in birch before, and if they are rare in and near London? — R. DINGWALL; Knolly's Croft, Leigham Court Road, Streatham, March 9, 1887.

ACRONYCTA ALNI IN HAMPSHIRE. — I was lucky enough to find on June 11th of last year, at Brockenhurst, a specimen of this

beautiful moth, just drying its wings on the trunk of a thorn tree.—G. M. A. HEWETT; The College, Winchester, Feb., 1887.

REARING VARIETIES OF *ARCTIA CAIA*.—The following notes are upon the effects of indoor confinement on the life-history of *Arctia caia*. Having obtained a brood of ova, in July last, they duly hatched, and some rapidly fed up and changed to pupa, from which I bred about thirty imagines, most of them a trifle darker than the ordinary type. I have still a few pupæ left (five), and have now, on Christmas Day, bred two extra dark varieties, remarkable also for having very pale under wings, instead of the usual crimson, and the black spots taking up most of the wings. From the moths I bred in September and October I obtained a goodly number of ova, that will keep no doubt until next spring; while I still have alive larvæ of the first batch in two or three stages of growth, and a brood of eighty odd larvæ from moths bred from the same batch,—so have larvæ, pupæ, and imagines from the summer brood of ova, and ova and larvæ again from them. I mean to try and restock some few localities near town with some common things that have almost, and in some cases become quite, extinct, through over-collecting by variety breeders on the one hand, and also through the birds, which are becoming far too common. Many insects stand no chance against the large number of sparrows, starlings, robins, &c., that swarm in our parks and round the suburbs of London.—H. SHARP; 23, Union Street, Portland Place, London, W.

BOMBYX QUERCUS OR CALLUNÆ.—Many years ago I wrote to my old and valued friend, the late Henry Doubleday, to ask him to explain to me the difference between *Bombyx quercus* and *B. callunæ*. In reply he sent me a pair of typical *B. quercus*, desiring me to observe that in northern specimens (*callunæ*) the white spot on the upper wings of the male moth are seen on the under as well as the upper surface; also that the bands differ. "In *quercus*, on the upper wings the band turns inwards, and forms on the under wings nearly a semicircle. In *callunæ*, on the lower margin of the upper wings the band turns outward, and on the under wings turns downward to the anal angle." Mr. Doubleday also mentioned that the form figured as *B. quercus* in Newman's 'Moths' was the typical form of *B. callunæ*. He believed *B. quercus* and *B. callunæ* to be dis-

tinct species. I have reared a good many *callunæ*, which were invariably found in this district feeding singly upon heather in spring time; they grew to a large size before they formed cocoons, and usually emerged early in the following year, but I have known them remain for two years in these cocoons. Some of the male moths have a brilliant orange spot upon each upper wing near the thorax, which adds much to the beauty of the specimens. — FRANCES J. BATTERSBY; Cromlyn, Rathowen, Westmeath, Ireland, February, 1887.

AGRIOPIS APRILINA.—Why do the beautiful forelegs of this moth refuse to be elevated on to the setting board, owing to the apparent tying of the tibia and tarsus together? I found this to be the case, not only in bred specimens, but in others which I took at ivy last year. Is it peculiar to the moth, or am I unfortunate in my specimens? It seems to be only after death that the stiffening takes place.—G. M. A. HEWETT; The College, Winchester, Feb., 1887.

PHEGALIA PEDARIA IN NOVEMBER.—A correspondent (Entom. 41), records the appearance of this insect on November 30th. I can relate also the capture of a specimen in the same month, having taken one on November 27th, 1881. In the following year it occurred abundantly throughout the spring to the beginning of May, a single specimen having been seen by a friend as late as the middle of June. In the midlands *P. pedaria* appears on the average from the middle of February to the middle of April.—W. HARCOURT BATH, Birmingham, Feb., 1887.

LARENTIA MULTISTRIGARIA.—On February 4th I took a single specimen of *Larentia multistrigaria*. Is not this an early appearance? I find that last season one appeared on February 14th, but after this cold north-east winds set in, which apparently checked their energies, for I did not observe them in any numbers until the third week in March. — T. B. JEFFERYS; Clevedon, Feb. 10th, 1887.

ARGYROLEPIA BADIANA.—In reply to Mr. Sheldon, I beg to say there are two species of larvæ, viz., *A. badiana* and *Parasia lappella*, feeding in September in the seed-heads of burdock (*Arctium lappa*), both of which I have bred in some numbers for many years past. The larvæ of *A. badiana*, when full fed, leave

the heads and spin their cocoons amongst the rubbish at the roots of the plant, while the larvæ of *P. lappella* fasten two or three of the seeds together, in which they hibernate and remain in the heads till the moths emerge. Another error appears to have been copied by one author from another respecting the larvæ of *Catoptria candidulana* (*wimmerana*), which are said to feed in the roots of *Artemisia maritima* in winter. The larvæ feed on the seeds of the plant in the autumn, and when full fed form their cocoons on the surface of the earth. I reared a fine series of this moth last season.—WILLIAM MACHIN; 29, Carlton road, Carlton Square, E., Feb. 20, 1887.

EARLY HISTORY OF *LITA KNAGGSIELLA*.—In response to Mr. Threlfall's request (Entom. 65), I beg to say that I did not take *Lita knaggsiella* freely at Haslemere. It was very scarce, and I doubt whether I took more than a dozen, certainly not a score altogether, although I worked very hard for it in successive years. I also spent hours in searching *Stellaria holostea* and *graminea* in the immediate neighbourhood of trees from which I had captured it, but never found a larva. The moth seemed to frequent oak trunks in places overgrown with bushes. It had, however, previously been reared from *Stellaria holostea*, in Germany, although mistaken for *junctella*, Dougl. It is recorded in the 'Entomologist's Annual,' 1866, p. 167.—CHARLES H. BARRETT, King's Lynn, March 9th, 1887.

PROTECTIVE VALUE OF COLOUR AND MARKINGS IN INSECTS.—At a meeting of the Zoological Society of London on March 1st, Mr. E. B. Poulton read a paper containing an account of his experiments on the protective value of colour and markings in insects (especially in Lepidopterous larvæ) and their relation to Vertebrata. It was found that conspicuous insects were nearly always refused by birds and lizards, but that they were eaten in extreme hunger: hence the unpleasant taste failed as a protection under these circumstances. Further, conspicuous and unpalatable insects, although widely separated, tended to converge in colour and pattern, being thus more easily seen and remembered by their enemies. In the insects protected by resembling their surroundings it was observed that mere size might prevent the attacks of small enemies. Some such insects were unpalatable, but could not be distinguished from the others. In tracing the

inedibility through the stages, it was found that no inedible imago was edible in the larval stage; in this stage therefore the unpleasant taste arose.

FERTILISATION OF FIGS BY INSECTS. — At a meeting of the Linnean Society, held March 17th, 1887, a paper by Dr. George King on the Indian Figs was read, in which it was shown that insects play a considerable part in the fertilisation of certain forms. Dealing with the structural peculiarities of the flowers in the genus *Ficus*, he specifies (1) male, (2) pseudohermaphrodite, (3) neuter, and (4) female fertile flowers. Besides these occur a set of flowers originally named by him "Insect-attacked females," but for which he has since adopted Count Solms-Lambach's term "Gall-flowers" (*Bot. Zeit.* 1885), this botanist having anticipated him in publication, though his own researches were of earlier date. As to the question of these gall-flowers, Dr. King states that the pupa of an insect can usually be seen through the coats of the ovary. The pupa when perfected escapes into the cavity of the receptacle by cutting its way through, and fully winged developed insects are often to be found in considerable numbers in the cavity of the fig. The pupa of the insect must become encysted in the ovary of the gall-flower at a very early period, for about the time at which the imago is escaping from the ovary the pollen of the anthers of the male flower is only beginning to shed. Thus Dr. King holds that through the interposition of insects the malformed female flowers doubtless become functionally important in the life-history of the fig-trees.

ACULEATE HYMENOPTERA OF CHESHIRE.—During the past three years I have worked up this interesting order of insects, and I think a list of captures, in this district, may prove interesting to the readers of the 'Entomologist.' I should like to know if any other collector has observed that the family Vespidae are attracted by *Cotoneaster microphylla* whilst in bloom.* Is it the flowers are the attraction, or, on the other

* [*Cotoneaster vulgaris* has long been known to hymenopterists as being very attractive to many of the Aculeate Hymenoptera, as also to many species of Diptera. The Vespidae were most probably in search of the larvæ of some lepidopteron, feeding on the plant, with which to store the cells for their young larvæ.—T. R. B.]

hand, is it the presence of minute insects? I could never prove either hypothesis satisfactorily, as the wasps, unlike the bees, would crawl away out of sight amongst the foliage as soon as they could, and the slightest disturbance would send them buzzing away. I caught scores of specimens, thinking I should find something or other in their mandibles, either for making the nest or as food for the young brood; but I could discover nothing whatever to enlighten me. I noticed that some kind of blight was present on the branches, but not in sufficient quantities as to lead me to conclude this was the attraction. However, I never worked a more profitable plant for Hymenoptera, as will be seen from the following list:—

Sphecodes gibbus, scarce, on hill-sides. *S. ephippia*, three specimens only, from various localities.

Halictus rubicundus, common, on flowers of *Doronicum plantagineum*. *S. cylindricus*, abundant, forming burrows in hard paths. *S. albipes*, scarce, from flowers of *Cotoneaster*. *S. smeathmanellus*, on hill-sides, under stones in their burrows.

Andrena albicans and *A. fulva*, abundant. *A. grymana*, one specimen only, from flowers of *Cotoneaster*. *A. varians*, local, from flowers of *Doronicum*. *A. nigro-anea* and *A. trimmerana*, abundant. *A. nana*, two specimens, from flowers of *Cotoneaster*. *A. ajzelicella*, one specimen, from flowers of *Cotoneaster*.

Nomada ruficornis, local, from flowers of *Doronicum*. *N. alternata*, common. *N. furva* and *N. fabriciana*, one specimen only.

Stelis aterima, one specimen, from flowers of *Cotoneaster*. This rare and beautiful insect was taken by Mr. A. O. Walker.

Osmia rufa, common. *O. ænea*, local.

Megachile centuncularis, larvæ, common in old posts. *M. willughbiella*, local. *M. circumcincta*, found only on sand-hills.

Anthidium manicatum, local, on flowers of sage and thyme.

Anthophora acerrarum, abundant: extremely fond of the flowers of the various species of *Aubretia*. *A. furcata*, two specimens of this rare insect.

Bombus muscorum, abundant everywhere. *B. cognatus* (*senilis*) and *B. distinguendus* (*fragrans*), scarce. *B. lapponicus*, extremely local (a nest of this beautiful insect was taken some years ago by Mr. Alfred O. Walker). *B. sylvarum*, common. *B. terrestris* (*lucorum*), abundant everywhere. *B. derhamellus*, one specimen only. *B. pratorum* and *B. lapidarius*, common. *B. hortorum*, local; the variety *subterraneus*, scarce.

Apathus rupestris, common, from flowers of *Cotoneaster*. *A. campestris*, abundant, from flowers of *Cotoneaster*. *A. vestalis*, three specimens only, from flowers of *Cotoneaster*.

Vespa vulgaris, *V. germanica*, and *V. rufa*, common, from flowers of *Cotoneaster*. *V. arborea*; I took six females, all from the above plant, but have never yet seen a male. *V. sylvestris*, common, from flowers of *Cotoneaster*. *V. norvegica* (*britannica*), scarce, from flowers of *Cotoneaster*.

—R. NEWSTEAD; The Grosvenor Museum, Chester, February 23, 1887.

MACROCENTRUS INFIRMUS BRED FROM HYDRÆCIA PETASITIS.—In August, 1885, Mr. Pierce, of Liverpool, very kindly sent me a batch of cocoons, which he found in the stem of a burdock, in which *Hydræcia petasitis* had been feeding, and last autumn sent me a similar batch; I obtained, on September 9th, 1885, from the first batch 175 females, and from the last 122 males of *Macrocentrus infirmus*. It is often observed that when breeding from batches of Braconidæ cocoons that only one sex is produced; this has been particularly noticed with *Macrocentrus linearis* and *collaris*, their long ovipositors make the female so very conspicuous. — G. C. BIGNELL; Stonehouse, February 15, 1887.

XESTOBIUM TESSELLATUM, F., AT SUNBURY.—On July 5th last, while in quest of Coleoptera, I noticed that several of the willow trees growing in this district had been recently perforated with rather large holes. Having a small chisel, I quickly removed portions of the bark and examined the decayed wood, and was eventually successful in finding two excellent specimens of this curious beetle. — G. A. LEWCOCK; 40, Oxford Road, Islington, N.

PACKING UNSET LEPIDOPTERA.—Can any one tell me the best method of packing unset foreign Lepidoptera? as I have a friend who wishes to send me some from Africa.—GEORGE H. SMITH; The Theological College, Dorchester, near Wallingford, Oxon, February 24, 1887.

[Butterflies merely require to be placed, with their wings closed, in envelopes or small paper packets. They are killed by pinching the under side of the thorax. The papers, with their contents, should then be packed closely in tin boxes and sent home.—W. L. DISTANT.]

THE PRESERVATION OF SMALL LARVÆ.—Some few months ago I wrote a short query respecting this question, but it elicited

no reply. Perhaps some of your readers will kindly inform me if it is possible to preserve the minute larvæ of the Tortrices and Tineæ by inflation. If so, it must be an extremely difficult and tedious process. I had hopes that an easier mode might be in vogue, but I am afraid that my supposition was groundless.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

PRESERVING THE COLOURS OF NEUROPTERA.—Can any of your readers kindly inform me how to preserve the colours of Neuroptera, and whether it is a difficult and elaborate process, requiring great dexterity of handling?—F. A. WALKER, D.D., Dun Mallard, near Cricklewood.

THE POST OFFICE AND EXCHANGE.—The enclosed has recently been issued by the Post Office. As the particulars relating to "compensation" may not be generally known to those who, like myself, go in largely for exchange, I would suggest your printing them in the 'Entomologist':—

Inland Parcels.—The rates of postage for inland parcels are 3d. for 1 lb., and 1½d. for every additional pound up to 11 lbs. The limits of size are:—Greatest length, 3 ft. 6 in.; greatest length and girth combined, 6 ft. Compensation for loss or damage to an amount not exceeding £1 will be given without payment of any special fee. For a fee of 1d. compensation will be given to an amount not exceeding £5, and for a fee of 2d. to an amount not exceeding £10.

Inland Registered Letters and Parcels.—Compensation for loss or damage to an amount not exceeding £2 will be given without payment of any special fee. For a fee of 1d. compensation will be given to an amount not exceeding £5, and for a fee of 2d. to an amount not exceeding £10. To secure compensation for damage of the contents of an inland registered letter or packet, the words "Fragile. With care" must appear on the cover. For a letter marked "Fragile. With care" the Postmaster-General reserves the right to select a route on which letters are neither received by nor delivered from trains in motion. The transit of such a letter in the post may possibly be less rapid than the transit of other letters.—J. W. TUTT.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *March 2nd, 1887.*—Dr. D. Sharp, President, in the chair. The Rev. Thomas W. Daltrey, M.A., F.L.S., of Madeley Vicarage, Staffordshire; Dr. Neville Manders, of the Army Medical Staff, Mooltan, India; Mr. Alfred Sich, of Chiswick; and Mr. J. T. McDougall, of Blackheath, were elected Fellows. Mr. Slater exhibited, on behalf of Mr. Mutch, two specimens of *Arctia caja*, one of which was bred from a larva fed on lime-leaves, and the other from a larva fed on low plants, the ordinary pabulum of the species. The object of the exhibition was to show the effect of food in causing variation in Lepidoptera. Mr. H. J. Elwes exhibited a large number of Lepidoptera-Heterocera, caught by him in the verandah of the Club at Darjeeling, in Sikkim, at an elevation of 7000 feet, on the night of the 4th August, 1886, between 9 p.m. and 1 a.m. The specimens exhibited represented upwards of 120 species,—which was believed to be a larger number than had ever before been caught in one night,—including Bombyces of the genera *Zeuzera*, *Stauropus*, *Dasychira*, *Lophopteryx*, &c.; Noctuæ of the genera *Diphthera*, *Graphiphora*, *Gonitis*, *Plusia*, &c.; and Geometræ of the genera *Boarmia*, *Odontoptera*, *Urapteryx*, *Cidaria*, *Acidalia*, *Pseudocoremia*, and *Eupithæcia*. Mr. Elwes stated that Mr. A. R. Wallace's observations on the conditions most favourable for collecting moths in the tropics were fully confirmed by his own experience during four months' collecting in Sikkim and the Khasias. The conditions referred to by Mr. Wallace were a dark wet night in the rainy season; a situation commanding a large extent of virgin forest and uncultivated ground; and a whitewashed verandah, not too high, with powerful lamps in it. He said that on many nights during June and July he had taken from sixty to eighty species, and during his stay he had collected between 600 and 700 species. Mr. Elwes also made some remarks on the Khasia Hills, the southern slopes of which he believed to be the true habitat of the greater part of those insects described many years ago by Prof. Westwood and others as coming from Sylhet, which was situated in a flat cultivated plain, under water during the rainy season, and not many miles distant from these hills. In consequence of the

unhealthy and extremely hot and wet climate of these hills no Europeans had done much collecting there, but the specimens were chiefly caught by the natives and brought into the town of Sylhet for sale. A discussion ensued on the remarks made by Mr. Elwes, in which Mr. McLachlan, Dr. Sharp, Mr. Champion, Mr. Kirby, and others took part. The Rev. W. W. Fowler exhibited a specimen of *Cathormiocerus socius*, taken a few years ago at Sandown, Isle of Wight. Mr. S. Stevens exhibited specimens of *Cathormiocerus maritimus* and *Platytarsus hirtus*. Mr. F. Grut said he was requested by Mons. Péringuey, of Cape Town, to announce that the latter was engaged on a monograph of the genus *Hipporrhinus*, and that he would be glad to receive specimens and other assistance from British entomologists. Mr. Gervase F. Mathew, R.N., communicated a paper entitled "Descriptions of new species of Rhopalocera from the Solomon Islands." Mr. George T. Baker communicated the following papers:—"Description of a new species of the Lepidopterous genus *Carama*, together with a few notes on the genus," and "Description of a new genus of Rhopalocera allied to *Thecla*."—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 24th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Messrs. J. E. Kelsall, J. Lea, and E. B. Nevinston were elected members. Mr. Tutt exhibited *Tephrosia crepuscularia*, Hb., from Hungary, and remarked that he was unable to obtain any forms of *T. biundularia* from there, although he had received it from Germany; he further showed continental forms of Agrotidae and specimens of *Acidalia perochraria*, Fisch., and contributed notes. Mr. R. South, *Lobophora polycommata*, Hb. (bred this year). Dr. Rendall, *Calocampa solidaginis*, Hb., from Cannoeh Chase. Mr. Tugwell, English and Scotch forms of *Lycæna bellargus*, Rott. Mr. R. Adkin, *Notodonta ziczac*, L., *Dianthorcia capsophila*, Dup., *Aplecta prasina*, Fb., and *Eupithecia pumilata*, Hb., from county Cork, with specimens from various English localities for comparison. Mr. J. J. Weir read a paper "On Melanism" [an abstract of which appears at page 85 of this number]. Mr. George Smith, of the Scioptron Company, then gave an exhibition of photo-micrographic slides, being photo-

graphs of the enlarged image of microscopic Natural History objects.

March 10th, 1887. The President in the chair. Messrs. D. J. Rice and H. H. Druce were elected members. Mr. Goldthwaite exhibited long series of male and female specimens of *Nyssia hispidaria*, Fb., bred by him this year. Mr. J. W. Slater, a variety of *Arctia caia*, L., having the red colour replaced by a yellowish or buff colour, and he stated that it had been bred by Mr. Mutch, of Hornsey, who had fed a number of larvæ on lime, and others on the usual food-plants of the species, with the result that those fed on lime were yellow varieties, the others being normal. A discussion then ensued as to the effect of strange foods in rearing varieties. Mr. R. Adkin exhibited *Zanclognatha tarsipennalis*, Tr., and remarked that nearly twelve months had elapsed between the escape of the larvæ from the eggs and the entrance into the pupa stage. Mr. Billups, *Tapinoma melanocephalum*, For., taken in the Palm House, Kew Gardens, on a species of palm (*Howea grisebachia*) from Tropical Australia, and he stated that it was the first recorded capture in Europe of this ant, and brought the number of exotic ants found in Kew Gardens by Messrs. Smith, Saunders, and himself up to seven species. Mr. E. Step contributed a paper on "Mosses," which was illustrated by diagrams and the exhibition of microscopical specimens.—H. W. BARKER, *Hon. Sec.*

REVIEWS.

The Larvæ of the British Butterflies and Moths. By the late WILLIAM BUCKLER. Vol. II. (The Sphinges or Hawk Moths, and part of the Bombyces.) Ray Society, 1886.

THIS volume contains 18 plates, and figures are given of the larvæ of our Sphinges, except those of *Naclia ancilla*, *Charocampa nerii*, *Sciopteron tabaniformis* (*Trochilium respiforme*), and *Sesia andreniformis* (*callantiforme*); and also the larvæ of the first 27 of our Bombyces.

The varied forms of the species figured, the grotesque shapes of some, and the richly-coloured appearance of others, have given

a scope to the efforts of both the delineator and the lithographer that the larvæ of the butterflies figured in the first volume did not offer. Plates XVIII. and XIX., in which the larvæ of the genera *Procris* and *Anthrocera* are figured, are amongst the least striking in appearance, but the minute markings which distinguish the different species from each other are most faithfully rendered, and one sees at a glance how little the mere colour of a larva enables a species to be distinguished; for instance, the five varieties of *Ino* (*Procris*) *staticeæ*, given in Plate XVIII., bear little resemblance to each other; and none of the larvæ of *Zygæna* (*Anthrocera*) *jilipendulæ*, figured in Plate XIX., are nearly so yellow as the type common on the South Downs, where the green form, here figured, is unknown.

Plate XXI. is singularly beautiful; the normal larva of *Acherontia atropos* and that of the red variety are given, well showing the great range of variation in this species. There are also three figures of the larva of *Sphinx convolvuli* in different positions, so that the markings are well shown. Plate XXIII. is quite gorgeous; eight larvæ of *Deilephila euphorbiæ*, in three stages of growth and with a wide range of variation in colour in the adults, are shown; all the minute details of the markings of this richly-decorated species are rendered admirably. Plate XXXIII. is excellent; five representations are given of that most singular, one might almost say comical-looking, larva of *Stauropus jagi*. Not only is this of the strangest shape, but it appears to have the habit of throwing itself into the most grotesque attitudes; it seems to be a veritable buffoon amongst Lepidoptera. Plates XXVII., XXVIII., and XXIX. give highly instructive details of the economy of the larvæ of the genera *Sphæcia* and *Sesia* (*Trochilium*); and although not possessing the beauty of some of the other plates, they are of greater interest from a scientific point of view. The work, indeed, may be characterised as excellent throughout. Mr. F. C. Moore has shown himself to be an accomplished entomological artist; the late Mr. Buckler's exquisite drawings have fallen into good hands; and the letterpress, under the able editorship of Mr. Stainton, is replete with information.—J. J. W.

Abstract of Proceedings of the South London Entomological and Natural History Society for 1886.

THE Annual Report of this Society for the past year extends to eighty-three pages, and contains a handsome plate by Mr. Frohawk, of some of the more interesting entomological subjects exhibited, the President's address, and abstracts of the proceedings of the meetings. The whole will be found worth perusal, as the pages contain much that is novel. We observe that the number of members has doubled during the year. The enterprise of the Society is such as to deserve every support, and it appears well on the way to become one of the leading Natural History Societies of this country.—J. T. C.

OBITUARY.

JOHN SANG.—Our readers will regret to hear that Mr. Sang, of Darlington, died suddenly at his residence during the night of March 19th, apparently having passed away in his sleep. Mr. Sang was at one time a successful linendraper of Darlington, and retired some years ago from business, with the intention of devoting the remainder of his life to the study of Micro-Lepidoptera. Having unfortunately become security for a friend, Mr. Sang was called upon to make good a large sum of money; this led to the sale of all his collections, which will be remembered to have taken place some few years ago in London. He had devoted much time to drawing the *Tineina* from nature, and this led to his afterwards, and up to the end of his life, being employed to delineate the British Coleoptera by Mr. Philip Mason, of Burton-on-Trent, and Mr. Sang developed an extraordinary gift in the work. The subject of this notice never published any very important work, but scattered communications from his pen will be found in the entomological periodic literature extending over many years. His age was fifty-nine, and we believe that he was never married.—J. T. C.

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NOTES ON THE GENUS *LYCÆNA*.

By RICHARD SOUTH, F.E.S.

(Concluded from p. 85.)

Lycæna eros, O.

THE male of this species is of a pale bluish-green on the upper surface, with fairly broad dark hind-marginal borders to all the wings, and black spots, sometimes but faintly indicated, on the margins of inferior pair. Normally there is no trace of a discoidal spot on fore wings, but two examples in my collection have short black lines at the external edge of discoidal cell, the position usually occupied by the discoidal spot. Venation blackish on hind margins of all the wings, and the same dark colour is, in one or two examples, projected into the white fringes. Female brown, with orange crescents on all the wings, sometimes only faintly exhibited. Black discoidal spot on fore wings. The under side coloration and arrangement of ocelli identical with the same characters in *icarus*. Normally there are two basal ocelli on fore wing, but in some specimens the lower, and in others both, are absent. Sometimes, too, the first and last eyed-spots of the central series are also absent. On the hind wings the discoidal spot is often without a black centre, and the white streak is always present, and, though often faint, sometimes extends from the orange crescents nearly to the discoidal spot.*

* The fifth basal ocellus, noted as occurring on the hind wings of some examples of *corydon*, *icarus*, and *bellargus*, is also to be seen in some specimens of *hylas*, *escheri*, and *eros*, as well as in such other species of *Lycæna* as *ægon*, *argus*, *cleobis*.

Larva unknown. A local species, occurring in mountain pastures at a moderate elevation in Switzerland, Tyrol, Savoy, Piedmont, &c.; also in the Pyrenees and Altai.

Var. *eroides*, Friv.—The male of this form is larger and more blue than the type. The hind-marginal borders are deeper and more clearly defined, and the spots on the hind wings larger. Under side characters are exactly those of typical *icarus*. My specimens are from South Russia and Pomerania. Both this variety and the type exhibit a shade of mauve when looked at from the side, but the mauve tint is especially noticeable in the Pomeranian examples of *eroides*. I have no female specimen of this form, but Mr. Kane says* it is “dark brown, with a few orange lunules at anal angle of hind wings.”

Var. *candalus*, H.-S., occurs in Syria and Asia Minor. I have two males from the latter country, which respectively expand 0·75 in. and 1·0 in. In colour they closely approach male *icarus*, but they have rather indistinct linear discoidal spots on fore wings, similar to the examples of *eros* referred to above. The hind-marginal borders are but little, if any, broader than in some British *icarus*, and the under sides are exactly as in that species. Dr. Lang† describes the female as “dark brown, with a row of small orange spots on the hind wings, and with the bases of all the wings faintly blue.”

Dr. Lang describes two other varieties of *eros*, viz., *myrrha*, H.-S.—“Somewhat like *eroides*, but much larger and paler in colour, the spots on the under side being proportionately smaller. Expands nearly 1·50 in. The female pale brown, with faint hind-marginal bands. Habitat, Asia Minor”; and var. *amor*, Stand.—“Size of the type. The male is light blue; all the wings with a narrow black border. Hind wings with a hind-marginal row of black spots; fringes white. Under side brownish grey. Fore wings with a discoidal and with a submarginal row of black spots; basal spots absent. Hind wings with three basal

zephyrus and var. *lycidas*, *astrarche*, *anteros*, and *arion*. Its situation on the inner margin is such that, in conjunction with the first three basal ocelli, it forms a curved series of eyed-spots. Occasionally the usual third and fourth ocelli are thrown out of line, when the last appears to belong to the central series, and increases the number in this series to eight, or nine if the last spot of central row happens to be a double one.

* ‘Handbook of European Butterflies.’

† ‘*Rhopalocera Europæ*.’

spots and a submarginal row; discoidal spot white; a marginal orange band between two rows of black spots. Female brown; bluish at the base. Fore wings with a discoidal black spot, and an indistinct marginal brownish band on the fore wings. Hind wings with a marginal orange band spotted with black. The under side much resembles that of *L. bavius*. Habitat, Samarkand."—'Rhoplocera Europæ.'

Comment on these last two forms of *eros* would necessitate reference to some other insects closely allied thereto, and which are considered distinct species. This would take me beyond the limit of my present purpose.

The resemblance between the females of the six species more directly considered in these notes is exceedingly close, and this fact alone should go far to convince anyone, who may be sceptical on the point, that all are descended from a common stock. But the males also have many identical characters, and are, moreover, intimately connected one with another by their several varieties. Giving full significance to both these facts, I am inclined to suppose that not only have all the six been developed from the same stock, but that they have been developed in a single line of descent. Although the type forms of male *corydon* and *bellargus* are distinct enough, we have seen that there are local forms of each which are not so readily separated. Such forms closely associate the two insects, and, in conjunction with the further fact of the larvæ of both being almost exactly identical, establishes their blood-relationship. Then we have male *icarus* with *bellargus* colour on the one hand, and others with black spots on the hind margins of inferior wings. These spots are found in males of both *bellargus* and *hylas*, but are not constant in either species, and the normal colour of *hylas* is close to that of *bellargus*. Thus *icarus*, *bellargus*, and *hylas* exhibit evidence of consanguinity. *Eros* is associated with *icarus* by the ornamentation of its under surface, and by the var. *candalus*. Male *escheri*, like the same sex of *icarus*, varies in the coloration of its upper surface. Sometimes its colour is like that of *bellargus*, but more frequently it favours *icarus*, and there are often black spots on the hind wings. The under-side colour of some examples approximates to that of *icarus*, and in others to that of *bellargus*.

In discussing the under-side ornamentation of the several species, the occurrence of a white triangular dash or streak has

been referred to in each case. Whatever modification there may be in the number, size, or arrangement of ocelli or orange crescents on the under surface of the several species or individuals of one species, this white streak is always found occupying the same relative position. Often, in consequence of pale coloration of the hind wings, the character is not well defined; but in specimens with dark-coloured secondaries, such as that figured, Pl. II., fig. 7, it generally stands out boldly. This white streak may be a feature in course of development, but I am rather disposed to consider it an ancestral character. The same kind of mark is found in a similar position on the hind wings of several species of *Lycæna*, besides those under consideration; but I do not propose referring further to these than by instancing *damon*, Schiff., which has a white streak of stripe-like proportions; and *astrarche*, Bgstr.

Eumedon, Esp., has a white streak, but this is in the form of a ray from the external edge of discoidal spot of hind wing, passing beneath the third and fourth ocelli of central series. Traces of a similar ray are found in several examples of *amanda*, Schn., and of all the species previously mentioned, except *damon*.

The marginal borders, discoidal and hind-marginal spots on the upper surface of the males are, I think, like the white streaks on the under sides of both sexes, remnants of an ancestral form; and, in accordance with this view, I should suppose that both sexes of the original stock, from which several species of *Lycæna*, including those with which we are chiefly concerned, have descended, were dark brown or blackish on the upper surface, with fringes but little paler, and probably discoidal spots on all the wings. The first ornamental characters acquired by both sexes were probably white or orange bands; these afterwards becoming modified, but chiefly in being broken up into crescents, when ocelli would also be formed on the hind margins. Then some shade of blue would appear by degrees on the upper surface of the males, and here "sexual selection" would play its part, as the females would choose partners which best pleased their fancy; and each female that had mated with a blue male would transmit to its offspring the particular shade of blue of its consort. Thus in time races would be established, and the descendants of the original stock divided. During the course of these developments the modified descendants of the original stock would have been

distributed over a wide area, and in the various new localities occupied would have to compete for existence with other animals already established therein. The survival and increase or deterioration and extinction of a form in any situation would depend upon the ability of such form to adapt itself to its surroundings, and here "natural selection" would exert a controlling influence; but this influence would operate principally in perpetuating, the most suitable colour and style of ornamentation on the under surface of the wings.*

The most ubiquitous species in the group is undoubtedly *icarus*. This is the dominant form, and from the fact of its occurring in high latitudes at the present day we may infer that it was among the earliest to migrate northwards. The first portions of Great Britain inhabited by *icarus* were probably Scotland and its islands, from whence it extended into Ireland. The progenitors of Scotch and Irish *icarus* would have come through North-west Europe,—at the time our islands formed part of the continent,—and were presumably of a more robust character than the individuals which subsequently came into England through France. The species would appear to have possessed a wonderful power of adapting itself to circumstances, as it is found to be established in all kinds of situations, and in a variety of climates. In the course of its migrations, *icarus* would found colonies on mountain and in valley, and some of these colonies would, as time went on, become isolated. Any aberration obtaining largely among the individuals so isolated would become specialised, and a new form developed. Many such forms have probably existed, but are now extinct; others are exceedingly local, and so greatly modified that their origin is unsuspected; whilst another, *hylas* to wit, although apparently independent of

* In whatever way a particular shade of blue was acquired by the males, sexual selection, acting through the choice of the female, would determine the continuance or suppression of such colour. Natural selection would regulate the adornment of the under side of both sexes: so that although a male might have the upper surface coloured as in *eros* var. *eroides*, for instance, the reproduction of this colour in the descendants of such male would not necessarily involve any change in the under-side colour or marking, so long as those characters were in harmony with the insect's surroundings. On the other hand, some variation in one or other of the under-side characters of an insect, say *icarus* var. *icarinus*, might confer certain advantages in a particular locality, and such modification would assuredly be repeated in the descendants of that insect, but without any concurrent change in the colour of upper surface.

icarus in some localities, is still associated with it by forms occurring in other localities, as, for example, in Ireland and Scotland. *Escheri* and *eros* may be species in the ordinary acceptation of that term, but they are not so distinct from *icarus* as are *pheretes*, *orbitulus*, and *anteros*, descendants of the same original stock, but by another line of which *astrarche* is the dominant form. *Corydon* and *bellargus* probably stand in the same relation to each other as do *icarus* and *hylas*.

When considering the under-side variation of *corydon* (*ante*, p. 8), I suggested that if individuals varying little or much in any one direction could be removed apart, the type of aberration, possessed in different degrees by the individuals set down, would become specialised. Of course such a result would depend (1) on the locality selected for colonisation being a suitable one, and (2) on the new colony being free from any chance visits of the typical or other forms of the species. Suppose, however, some such experiment to have been successful, and a race of more or less uniform aberrations to have been developed, we should still find that the earlier stages of the aberration would occur among the type form, and these minor varieties would connect the aberrant race with its parent type. Of course in this case, from our knowledge of its origin, we should not consider that we had established a new species; but if such a race had been developed in the ordinary course of evolution,—I mean without man's assistance,—we should have no knowledge of its history, and consequently should have some difficulty in determining its rank. Should we, however, know that examples of an allied species occasionally varied in the direction of the special character of this race, we should, I think, be justified in assuming that it was a local form of the species among which similar aberrations occurred. A case in point is that of *L. eros* var. *candalus*. Some entomologists consider this a distinct species, whilst others only allow it to be a form of *eros*. Whether considered as a species or a form of *eros*, or even of *icarus*, it is equally interesting as an example of one of the modifications which have occurred from time to time in the development of the several insects we have had under consideration. Why certain forms should be selected for specific rank, and others, which have distinctive characters of equal merit, be considered merely local varieties, I know not. Take *corydon* var. *albicans* for example. Does anyone see specific

characters in this insect? It is quite as distinct from typical *corydon* as typical *hylas* or *eros* are from *icarus*. Is there any fixed rule to guide us in determining the exact point at which a variety merges into a species? I am not aware of any such rule. In fact I doubt if any set of rules could be framed which would meet the requirements of all cases. I agree with those who consider an aberration as the first stage, as it were, in the development of a species; but I hold the opinion that a local form, however greatly it may have become modified from the type, cannot legitimately rank as a species, whilst individuals occurring among either the local or type forms can be found to connect the two.

In conclusion, I may say that I regret being unable (from want of material) to enter into a consideration of some other species and forms of this most interesting but perplexing genus. I can only hope that at some future time, when I may have extended my series of certain species and obtained some local forms, I shall be able to add a few further notes on the genus *Lycæna*.

NOTES ON SILK-PRODUCING BOMBYCES—1885.

BY ALFRED WAILLY.

(Membre-Lauréat de la Société d'Acclimatation de France.)

In my previous reports on the rearings of wild Silkworms and other exotic Lepidoptera, I have invariably spoken of the cold weather, or sudden changes in the temperature, as one of the two great impediments in the way of their successful rearing in the open air or indoors at the ordinary temperature. In 1885 the weather was even more unfavourable than in previous years. The months of May and June were so cold that the emergence of moths from the cocoons was delayed several weeks, which created such a disturbance in the economy of the insects that many of the eggs obtained were infertile. Cocoons, such as those of *Attacus atlas* (Ceylon race), all died, and out of a large number of *Cricula trifenestrata* only three moths emerged. British Lepidoptera were affected in a similar manner, although not so much as exotic species. I shall therefore, in future, keep the cocoons at a warm and even temperature from the beginning

of April till all the moths have emerged and the larvæ hatched, especially if the latter are to be reared in the open air.

The other great enemy is the common house sparrow, that useless pest, of which so many have to complain. The sparrow destroys everything that is good, and nothing else but what is good, and it gives nothing in return.

In 1885, as in 1884, I should in all probability have had a very successful rearing of the valuable oak silkworms, *A. pernyi* and *A. yama-mai*, had not the sparrows destroyed them all on two different occasions. The larvæ of *A. pernyi* had hatched from eggs sent from Spain, *A. yama-mai* from eggs sent from France. They were on trees covered with netting which was in very bad condition, and the sparrows managed to get through, as soon as they had perceived the larvæ. The netting was mended, and a second lot of larvæ obtained from my own moths were placed on the trees, but these had the same fate, the crafty sparrows always finding a little opening to get under the netting.

From the experience acquired after rearing for a number of years various species of wild silkworms, we come to the conclusion that *Antheræa pernyi* (the North China oak silkworm), and *Attacus cynthia* (the Ailanthus silkworm), also a native of North China, are by far the easiest to rear on a large scale in northern countries. *Telea polyphemus*, of the United States of North America, succeeds also very well in the open air, but the propagation of this species is difficult, and so is that of *Attacus yama-mai*, the Japanese oak silkworm.

A silk manufactory in Lyons has offered to purchase samples of empty or dead cocoons of all species of wild silkworms, for the purpose of testing their qualities; after these experiments, immense quantities of empty cocoons will be purchased of all good wild silks. I shall, therefore, be happy to receive communications from persons in all countries where these wild silkworms can be reared easily on a large scale, and to obtain from them samples of from ten to twenty pounds in weight of empty or dead cocoons of each species. Communications to be kindly sent to me at Norbiton, Surrey.

I shall now mention some of the species which were reared in 1885. Several of my correspondents succeeded in rearing such species as *A. yama-mai*, *A. pernyi*, the hybrid *roylei-pernyi*, *Actias luna*, *Callosamia promethea* and *cynthia*; some were

unsuccessful owing to various causes, others have not sent the results of their experiments.

With respect to my own experiments, the species which I had in the open air, *A. yama-mai*, *A. pernyi*, and *roylei-pernyi*, were entirely destroyed by the sparrows as above stated, the netting I have over some trees being now entirely rotten. Besides this, having been in Paris during the month of August, I had to discontinue the rearings in the house at the end of July; these had gone on in a very satisfactory manner, till most of the larvæ were sent to various correspondents.

Antheræa yama-mai, Guérin-Méneville (Japanese oak silk-worm).—This valuable species, which forms a beautiful cocoon, yellow or green, similar in shape to that of *Bombyx mori*, was, during a certain number of years, cultivated in several European countries. The greatest hopes were entertained respecting the ultimate success and acclimatization of this Japanese silk-worm, which was going to transform our oak leaves into silk. But gradually all these hopes vanished as two great difficulties stood in the way to success: the eggs generally hatched before the breaking out of the oak buds, and the moths, for the most part, refused to pair in captivity. So every year the rearings went on a decreasing instead of an increasing scale, till at last the species disappeared almost entirely. In Spain, however, the rearers of this species had been remarkably successful, and the worms were bred for several years in immense quantities in the oak forests on the estates of the Marquis de Riscal, in the province of Cáceres, Estremadura. At the Paris International Exhibition, in 1878, large quantities of *A. yama-mai* cocoons were exhibited. Unfortunately, one year, in the month of May, a night frost destroyed the young oak leaves on which the thousands of worms were feeding, and starvation was their fate. After this unexpected disaster, the rearings were entirely abandoned.

In the meantime, while the *A. yama-mai* was gradually disappearing, a formidable rival had made its appearance; that was *Antheræa pernyi* (the Chinese oak silkworm), introduced into France, like *A. yama-mai*, by Guérin-Méneville.

From that time the Chinese *A. pernyi* was reared in preference to the Japanese *A. yama-mai*, the latter being abandoned almost entirely; and what was the cause of this? The cocoons

of both species are closed, that of *A. pernyi* being the larger; and their silk, which can be reeled, is very likely of equal value. But *A. pernyi* had two great advantages over *A. yama-mai*: the moths paired readily in-doors as well as out-of-doors, and the worms hatching in May at the earliest, and in June in moderate climates, have a good supply of food as soon as they hatch.

As it is well known, the *A. yama-mai* hibernates in the ovum state, or rather in the larval state, the larvæ, fully developed about two or three weeks after the laying of the eggs, remaining in the egg from the month of August or September till the spring. The first difficulty with the rearing of *yama-mai*, was the supply of food as soon as the hatching of the worms commenced, and it often took place before the breaking out of the oak buds as above stated.

Now this difficulty can be overcome, as it has been found that the young *yama-mai* larvæ can feed on hawthorn and hornbeam (*Carpinus betulus*), the foliage of which is earlier than that of the oak. Very likely it might feed also on some other kinds of foliage till the oak leaves make their appearance. Small, gently-forced oak trees in pots might also be used. I must also add, that if the *yama-mai* eggs are kept in the open air all the winter in a northern aspect, and protected against the rays of the sun, they will seldom hatch before the oak trees break into foliage; if so, it will only be a matter of feeding the worms for a short time on a foliage different from their natural one.

Coming next to the second great difficulty, that of the reproduction of the species, it must be stated that the pairing of the moths will easily take place if the cages containing the moths are placed in the open air instead of in rooms, as it was done by entomologists or amateur sericulturists. One of my French correspondents, an eminent and most skilful breeder of silk producers, has always been successful with his *yama-mai*, which he has propagated from the same stock ever since he commenced with this species. He places his young *yama-mai* larvæ in the open air on oak branches, immediately they are hatched, whatever may be the state of the weather; they can resist the frost. These few particulars may induce some entomologists to try again this very interesting silkworm. The *yama-mai* ova I had in 1885, hatched from April 1st; they were fed during a few days on hawthorn and hornbeam, but seemed to prefer the latter.

On the 26th they were placed on the little oak trees in my garden, the trees being under a large framework covered partly with wire, partly with fish-netting. The fish-netting had become so rotten that sparrows got in and destroyed all the larvæ I had, as I mentioned before. The *yama-mai* larvæ were in their last stage and in splendid condition; they were destroyed about the middle of June, all on the same day. The second stage of the larvæ commenced on May 11th; the third stage on the 28th; the fourth on June 3rd; the fifth about June 11th. There were about four dozen worms.

It may be of importance to record the following fact: On the 4th or 5th of May there was a sudden change of temperature, the weather turned cold and wet. Some of the *yama-mai* worms had been placed on young shoots or suckers, which had started from the crowns of oak trees, the stems of which had perished after the moving of the trees to their new quarters. In consequence of this sudden change of weather, I covered with a large bell-glass the suckers of one of the little trees, on which I had placed eighteen young larvæ, to watch their progress, and see if they would grow faster or better than those which had been left entirely unprotected. Some days after, I perceived a large quantity of ants under the glass; there was a nest at the root of the tree. This was a very unpleasant discovery. What was I to do under the circumstances? I wished the larvæ to remain on the foliage, which grew splendidly under the glass; on the other hand I was afraid the ants would destroy the little worms. I took half a dozen worms away, and left the others to take their chance with the ants, which went over the leaves and everywhere under the glass. The larvæ, however, continued to thrive; not one disappeared; the ants crawled over them, but never did them any harm. It has been often stated that ants are very destructive and dangerous to young silkworms, but on this occasion no harm was done. Had the cold and wet weather paralysed or weakened their organs so as to make their biting powerless? Therein may be found the true cause. However it may be, it is some consolation to know that ants are not at all times such dangerous enemies as one might suppose.

(To be continued.)

THE PRESERVATION OF LARVÆ BY INFLATION.

By J. W. TUTT, F.E.S.

MR. HALL asks (Entom. 114, 115) whether "it is possible to preserve minute larvæ by inflation."

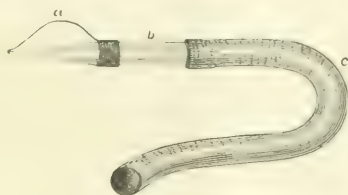
As I have preserved a very great many larvæ by inflation without any serious difficulty and on a very simple plan, I think I may say it is quite possible. Of course a great deal of tact and care is required in the manipulation of the smaller ones, and, however careful one may be, I think it impossible to preserve them without spoiling one now and again, but they can be done with extreme rapidity when once mounted; and the process I adopt is neither "difficult nor tedious." At the same time, I do not see the scientific value of preserving small larvæ, and have altogether given up doing so. Among our Tortrices and Tineæ, especially among the smaller species, the small points of difference between closely-allied species are, even in well-preserved specimens, well-nigh lost, and a good drawing or description of one's own, made from the actual living larva, is, in my mind, of much greater value. The coloration and markings of many minute larvæ are dependent, to a great extent, on the alimentary canal and the dorsal vessel, especially the former, the actual outside membrane being, when the viscera have been taken out, almost transparent and devoid of its natural coloration. For this reason, the murder of the little fellows seems unattended with any positively good result; hence, as I have previously stated, I have abandoned the plan of preserving or inflating these larvæ when there seems no scientific return for my trouble.

Many of the Geometers also fall under the same category; but there are in this group some striking exceptions, the genus *Eupithecia* standing out conspicuously. The colours and markings of most of these larvæ are retained in their entirety, and the rate at which one can do them is surprising; their bodies are so small that they dry almost immediately. I think anyone with practice could inflate at least twenty specimens of *E. oblongata* (*centaureata*) in an hour. I have inflated five of that species and five of *E. absynthiata* in less than half the time.

The preserved larvæ of Bombyces and Noctuæ, however, add great interest to a collection. Their colours are generally retained

in the same condition as during life. Those species where the larva is thickly covered with hairs have the most natural appearance, and give no trouble whatever. It is only larvæ which retain their natural appearance which seem to me worth preserving.

I have seen a great deal written about preservation of larvæ by inflation, and almost fear to go over such well-trodden ground; but, although nothing to do with Mr. Hall's query, I venture to hope that the following system, adopted by me with success, may be of use to some of the readers of the 'Entomologist.' The system will, I venture to say, bear comparison for simplicity with any other method. A few glass-tubes of small bore (say quarter of an inch), a piece of India-rubber tubing, a small steel spring, and a wide-mouthed lamp, are all that is required. The spring can often be dispensed with, a piece of fine cotton being used instead. The *modus operandi* is as follows:—Put the glass tube into a powerful flame, taking hold of one end of the tube in each hand. Then, as the glass begins to melt, draw it carefully out, when a half of the tube drawn out to a fine point is left in each hand. The extreme point (being closed) is then broken off, and you can then blow completely through it. Now fix a piece of India-rubber tubing on the broad end, thus:—



a. Spring. b. Glass tube. c. India-rubber tubing.

On the narrow end of the tube fasten a small spring made of a piece of bent steel, which can move only up and down in a vertical direction. This is to hold the anal flap of a larva when placed on the tube (the end of the spring must fall on the extreme edge of the point).

The instrument is now ready for use. Having fixed the eviscerated larva by inserting the fine end of the tube into the anal orifice, let down the spring on the anal flap. This holds it in position. Place the free end of the India-rubber in your mouth and blow gently through; the larva at once expands to its natural size and, generally, form. Then hold it over a broad-

mouthed lamp, where the heat is not too concentrated (the distance from the mouth of the lamp is soon learned by practice), and keep the tube filled with air. There may be some difficulty at first, but I find none, in breathing through the nostrils and keeping up sufficient pressure with my mouth at the same time. With a large larva the process of drying takes much longer, but the pressure of the finger and the thumb on the India-rubber tube keeps the air in the glass tube and the body of the larva. Care must be taken to fill the tube with air again before the finger and thumb are removed, otherwise the larva will partially collapse, and is then likely to be of little value. Great care must be taken to thoroughly dry the larva before removing it from the tube, otherwise the larva will partially collapse after it is removed, when it is next to useless to attempt to do anything with it. In removing the larva from the spring, it is sometimes necessary to slightly moisten the anal flap, which occasionally adheres to the tube.

The evisceration of the larva wants a little care. I find the following the best plan:—Insert a fine needle into the anal orifice, then move it from side to side and up and down, so as to break the membrane forming the alimentary canal. Then lay the larva on a pad of soft blotting-paper (to absorb the moisture), and with a small roller—a bone pen-holder will do very well—commence rolling gently towards the anal orifice, beginning a short distance from it. Gradually increase the distance, until at last you roll from the head to the anal segment. If an attempt be made to force the whole of the viscera out at once the pressure will break open the integument, the anal orifice being too small to allow a free passage.

The above is a rather rough-and-ready method, but it involves little or no outlay, is no trouble to get ready, never gets out of gear, and does the work, as far as I can judge, as well as any other system. If anyone cares to try the plan, I should be pleased to give any explanation, as far as I am able, if there is any difficulty arising from want of clearness in the above remarks.

Rayleigh Villa, Westcombe Park, S.E.

[See also a paper "On the Preservation of Lepidopterous Larvæ by Inflation," by C. H. and H. M. Golding-Bird; with woodcuts (*Entom.* x. 255). Although Mr. Tutt's remarks are there anticipated, we give them for the use of new readers.—ED.]

ENTOMOLOGICAL NOTES, CAPTURES, &c.

RETARDED EMERGENCE OF *PAPILIO MACHAON*.—Having reared a quantity of *Papilio machaon* from larvæ, I can add my testimony to the fact that a considerable percentage of the imagoes do not emerge until the second year. Occasionally they do not emerge for a period of three years, in which event they are nearly always crippled. Whether this is the case in a state of nature it would be very interesting to ascertain.—W. HARCOURT BATH; Ladywood, Birmingham.

LATE APPEARANCE OF *EUCHLOË CARDAMINES*.—There have been some notices of the late appearance of this insect (Entom. 63, 106). I think the insect is generally on the wing late in June and early in July, but more frequently the late specimens are females, and hence are overlooked. Males do not occur late so frequently, but when they do occur they are so conspicuous that the fact is at once noted. During the first week of July, 1881, I took half a dozen females, but never saw a male during that time. The following July I took a male as late as the 16th, but saw none after, either males or females. The latest dates I have noticed since do not extend beyond the 8th of July, but I find an occurrence in the July of each year, except 1886, when all the *cardamines* I saw amounted to two. These were seen during Whit-week.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E.

VANESSA ANTIOPA WITH WHITE BORDERS.—I am just in receipt of the enclosed letter from my friend Mr. Wurzbürger, of Creuznach, Rh. Prussia, an enthusiastic collector of Lepidoptera, relating to *Vanessa antiopa*. On seeing the specimens of this butterfly, of which I have several in my collection, all of which without doubt have been captured in Great Britain, and on my remarking that many entomologists considered the white borders which each possesses indicated a certain guarantee of their genuineness, he seemed highly amused, and confirmed the feeling I have always had myself, that the white borders had nothing to do with the question. The enclosed letter is so interesting that I forward it for publication to the 'Entomologist.'—S. J. CAPPER; Huyton Park, Huyton, April 15, 1887.

"Hereby I enclose two *Vanessa antiopa* (with white borders), which, among others, I caught this morning near our town, at

the border of a forest. *V. antiopa* hibernates, and appears in spring, together with *V. polychloros*, *V. urticae*, *V. c-album*, &c. (also *Gonepteryx rhamni*). When the butterfly leaves the chrysalis in July it has a yellow border; in spring its border is paler, sometimes light yellow, often quite white. I caught four *V. antiopa* this morning; one of them had a yellow border, turning white at the outer side. I saw two or three more flying. I often noticed that later in spring (May or even sometimes early in June) the borders of *V. antiopa* are perfectly white, all the yellow colour having faded. You may be quite sure that those specimens of *Vanessa antiopa* which sometimes have been caught in England have come from the Continent, and are hibernated specimens having white borders. No caterpillar of *V. antiopa* ever has been found in England. The hibernated butterflies never are quite perfect; the wings are always more or less broken. —M. WURZBURGER; Creuznach, Rh. Prussia, April 10, 1887."

VANESSA ANTIOPA IN SUSSEX.—On the 20th August last a boatman caught a specimen of *V. antiopa* at St. Leonard's-on-Sea. The beautiful insect had settled on his coat while on the beach. It had a yellow border, so I suppose it had blown over from the Continent. It is now in my collection.—A. J. FIELD; 145, Isledon Road, Seven Sisters' Road, Finsbury Park, N.

VANESSA C-ALBUM, &C., IN NORTH WORCESTERSHIRE.—On Good Friday, April 8th, I visited a locality in North Worcestershire, and met with *Vanessa c-album* in abundance, flying in company with *Vanessa io* and *Gonepteryx rhamni*. They all seemed to prefer the sheltered valleys and open spaces in woods. —W. HARCOURT BATH; Ladywood, Birmingham.

VANESSA C-ALBUM IN SUSSEX.—Whilst collecting larvæ of Micro-Lepidoptera on April 11th, between Shoreham and Bramber, I was fortunate enough to capture a fair specimen of *Vanessa c-album*, being, I believe, the first taken in the county of Sussex for many years.—A. C. VINE; Temple Street, Brighton, April 18, 1887.

APATURA IRIS IN THE FOREST OF DEAN.—This insect used to be taken occasionally about twenty years ago in the Forest of Dean in Gloucestershire, but I have heard of no recent capture. Can any reader of the 'Entomologist' inform me of the occurrence

of this insect in the above locality within the last decade?—
W. HARCOURT BATH; Ladywood, Birmingham.

ZEUZERA PYRINA.—In reply to the latter part of the question concerning *Zeuzera pyrina* (Entom. 108), I beg to say that the insect is fairly common in this neighbourhood. The larva is particularly partial to pear trees, and I found one in March, 1878, in a small branch of whitethorn. The moths may occasionally be seen at rest on affected trees, and I think are easily attracted to light, as two or three specimens that I have had were found near gas-lights.—ALFRED SICH; Burlington Lane, Chiswick, W., April 9, 1887.

ZEUZERA PYRINA (*ÆSCULI*).—In answer to the questions (Entom. 108) relative to *Z. pyrina* (*æsculi*) as regards locality, J. F. Stephens, writing in 1829, says, "Often taken in and near London"; and the Rev. F. O. Morris, in his book of 'British Moths,' mentions "Hyde Park and St. James's Park, and other parts near London," for this species. I remember picking up, some seventeen years ago, a female at the base of an old elm in Kensington Gardens. Perhaps Mr. H. Sharp will tell us whether the species is still common in London, when he publishes his list of Lepidoptera taken within five miles of the Marble Arch, promised Entom. xviii. 78. As to food, Mr. O. S. Wilson, in his work on Larvæ (1880), enumerates twenty distinct kinds of trees inhabited by *Z. pyrina*, but does not include birch among them. The Rev. F. O. Morris, however, who only enumerates ten, mentions birch as a food. Combining their lists we get a total of twenty-three kinds. As guelder-rose, holly, lilac, box, and hazel are mentioned by these writers, the larva apparently infests small trees as well as big. In Entom. vii. 138, there is an account of some in a small Siberian crab-tree, four inches in circumference.—H. CHITTY; 33, Queen's Gate Gardens, S.W., April 6, 1878.

ZEUZERA PYRINA IN MARCH.—A cousin of mine captured a female of this species on March 3rd, 1887, about half a mile from the centre of this town. The moth was found in some straw which had been placed around a rose tree in his garden. My cousin, unfortunately, not being a naturalist, roughly killed the moth and put it in a box for me. When I opened the box in which it had been placed I found a few eggs had been deposited,

but the insect was of course worthless. I am at a loss to understand *Z. pyrina* being out so early, as I believe it does not generally, if ever, hibernate in the perfect stage. Perhaps some of your readers, however, may be able to explain the cause.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

GREEN PUPA OF *PLUSIA GAMMA*.—In August, 1883, I found a pupa spun up in a bramble-leaf at Colwyn Bay, North Wales. The pupa was of the shape and size of that of *P. gamma*, but of a beautiful light green, the cocoon being white. The pupa was found about August 26th, and retained the green colour until September 1st, when it passed successively through yellowish green, pinkish brown, and on to black (with the *gamma* showing plainly through the pupa-case). It remained black from September 3rd to 5th, when an ordinary *P. gamma* emerged. The specimen differs, so far as I can see, in no way from the ordinary type. After emergence the pupa-case remained light brown. I had never heard of the pupa of *P. gamma* being green before, and, not having met with a similar case since, I now place it upon record, and shall be pleased to hear if any of your readers have met with such an occurrence. I made a note of the foregoing at the time, and the moth is set apart in my cabinet.—J. GÜNTHER; Oldham, April 9, 1887.

PLUSIA NI IN HAMPSHIRE.—As *Plusia ni* seems to be uncommon, it may be interesting to record the capture of a fresh specimen of this insect near Bournemouth on August 10th, 1885.—B. G. NEVISON; 2, Elm Villas, Heath Street, Hampstead.

HELIOTHIS ARMIGERA IN LEICESTERSHIRE.—I took *H. armigera* on a young tree in a street in Leicester on Oct. 8th last.—B. G. NEVISON, 2, Elm Villas, Heath Street, Hampstead, April, 1887.

LARVÆ OF *CROCALLIS ELINGUARIA*.—On August 21st I found a female of *C. elinguaris* on a lamp. On opening the box the next morning I was pleased to find a batch of eggs, the larvæ of which are only just emerging. I should like to know if this is usual, as Newman's book on 'British Moths' says it lives throughout the winter in the larva state, about half grown.—W. E. BUTLER; 91, Chatham Street, Reading.

AGRIOPIS APRILINA.—I can corroborate, from my own experience, what Mr. G. M. Howell writes (Entom. 110) respecting

the "tying of the tibia and tarsus together" of the fore legs of *Agriopsis aprilina* after being killed. Whether the same result may obtain upon natural death I cannot say. It is well-nigh impossible to get the fore legs into a proper position when the moths have been poisoned, although the wings may be beautifully relaxed, and in endeavouring to get them out it generally happens that the whole leg is torn from the body.—JOSEPH ANDERSON; Chichester.

[I think if our correspondents would use strong ammonia for killing their specimens the stiffness complained of would not occur. If properly used even the green of *Agriopsis aprilina* would not be affected by this agent.—J. T. C.]

HYBERNIA MARGINARIA var. FUSCATA.—The variety *fuscata* of *H. marginaria* (*progemmaria*) seems to be generally distributed throughout the Birmingham district, having been taken by myself in several localities, but is by no means common. Is *fuscata* a North of England form only, as I have never heard of its capture in the South (below lat. 52°)? Perhaps some of your readers can give information upon this point.—W. HARCOURT BATH; Ladywood, Birmingham.

EPHESTIA KÜHNIELLA IN BRITAIN.—I write to say that I sent specimens of the moths bred from rice-cones, and recorded (Entom. 66) as *Myelois ceratoniae*, to Mr. Barrett, who writes me saying they are of a species new to this country, viz., *Ephestia kühniella*, which was discovered in Germany about seven years ago by Professor Zeller, who found the larvæ feeding on wheat-flour. It has now found its way to this country, and possibly may become troublesome, having got into the bakers' meal-rooms about here. The moth is a large and handsome species.—W. THOMPSON; 183, Stantonbury, Stoney Stratford, Bucks, April 7, 1887.

CLASSIFICATION OF COLEOPTERA.—At a meeting of the Zoological Society of London, held April 5th, a communication was read from the Rev. H. S. Gorham on the classification of the Coleoptera of the division Langueriides. The author pointed out the characters which, in his opinion, were available for the systematic arrangement of this family of Coleoptera, and for its division into genera. The subject had hitherto not received the attention it deserved, and several errors had gained currency,

owing to the hasty and insufficient way in which the structure of these insects had been analysed. He added an analytical table of about forty genera, many of those proposed being new.

ERRATUM.—In Lepidoptera of South Buckinghamshire, p. 90, 6th line from foot, for *N. rhomboidea* read *N. stigmatica*.—J. SEYMOUR ST. JOHN.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*April 6th, 1887.* Dr. David Sharp, M.B., F.Z.S., President, in the chair. Mr. Francis Galton, M.A., F.R.S., of 42, Rutland Gate, S.W.; Mr. John Henry Leech, B.A., F.L.S., of 10, Hyde Park Terrace, W.; and Mr. George S. Parkinson, of Percy Cross, Fulham, S.W., were elected Fellows. Mr. Samuel Stevens exhibited specimens of *Aretia mendica*, collected in the county of Cork, by Mr. M'Dowell, of Manchester. The peculiarity of the Cork form of the species is that the majority of the males are as white as the female of the English form; and although smoky-coloured specimens occur intermediate between the Irish and English forms, the typical black or English form appears to be unknown in Cork. Mr. M'Lachlan exhibited a zinc box used by anglers for the purpose of keeping living flies in, which he thought might be adapted to practical entomological use in the field. Mr. George T. Porritt exhibited a large number of specimens of *Hybernia progemmaria*, bred from moths collected at Huddersfield last spring. All the females and a large proportion of the males were of the dark variety *fuscata*, which formerly was almost unknown in Yorkshire, but which now seemed likely to replace the paler and original type. Mr. Jenner Weir and Lord Walsingham both remarked that the number of melanic forms appeared to be on the increase in the north, and suggested explanations of the probable causes of such increase. Mr. Gervase F. Mathew, R.N., exhibited several new species of Rhopalocera, taken by him in the Solomon Islands during the visits to those islands of H.M.S. 'Espiegle' in 1882 and 1883. Amongst the specimens exhibited were species of *Euploea*, *Mycalesis*, *Messarus*, *Rhinopalpa*, *Cyrestis*, *Diadema*, *Parthenos*, *Lampides*, *Sithon*, *Pieris*, *Papilio*, &c. Mr. E. B. Poulton exhibited a large and hairy lepidopterous

larva—apparently of a Bombyx—brought from Celebes by Dr. Hickson, and made remarks on the urticating properties of the hairs of the species, which were said by the natives to produce symptoms similar to those of erysipelas if the larva was handled. Lord Walsingham, Mr. M'Lachlan, Dr. F. A. Dixey, Mr. Jenner Weir, Dr. Sharp, Mr. Slater, and Mr. Poulton took part in a discussion as to whether urtication was due to the mechanical action of the hairs in the skin, or to the presence of formic acid, or some other irritant poison in glands at the base of the hairs. There appeared to be no doubt that in some species the irritation caused by handling them was merely due to the mechanical action of the hairs. Mr. P. Crowley exhibited a collection of Lepidoptera recently received from West Africa, including specimens of several new or undescribed species of *Mylothris*, *Diadema*, *Harma*, *Rhomaleosoma*, &c. Mr. H. Goss reported the capture by Mr. G. D. Tait, at Oporto, in September last, of a specimen of *Anosia plexippus*, and remarked that, although some twenty specimens had been caught in the South of England, only two specimens had been previously recorded from the continent of Europe. Lord Walsingham read a paper entitled "A Revision of the genera *Acrolophus* (Poey) and *Anaphora* (Clem.)"; and he exhibited about twenty new species of these and allied genera. Mr. Stainton made some remarks on the genus *Anaphora*, and said he was glad Lord Walsingham was working at it and its allies. The paper was further discussed by Mr. M'Lachlan, Mr. Champion, and Dr. Sharp. Mr. Poulton read "Notes in 1886 on Lepidopterous Larvæ, &c." In the discussion which ensued, Lord Walsingham referred at some length to instances of protective resemblance in larvæ, and alluded to the existence in certain species, especially of the genus *Melitea*, of prothoracic glands. Further instances of protective resemblance were cited by Mr. Jenner Weir. Dr. F. A. Dixey remarked on the extraordinary powers of contraction which appeared to be possessed by the retractor muscle of the flagellum in *D. vinula*, and enquired whether any corresponding peculiarities of minute structure had been observed in it. The discussion was continued by Mr. Gervase Mathew, Mr. W. White, Dr. Sharp, Mr. Porritt, and others.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—March 24th, 1887. R. Adkin, Esq., F.E.S., President,

in the chair. Messrs. J. Stringer and J. W. Slater were elected members. Mr. J. A. Cooper exhibited a variety of *Cidaria immanata*, Haw., from North Devon. Mr. Carrington remarked that this form was found not uncommonly in the mountains of Scotland, and he believed the larvæ fed on bilberry. Mr. Cooper also showed a specimen of an ichneumon bred from a pupa of *Sesia sphegiformis*, Fb. Mr. T. R. Billups exhibited *Stilpnus deplanatus*, Gr., bred from the larva-case of a species of *Psyche* found on a fence in his garden at Peckham; also *Apanteles tetricus*, Reinh., bred from the common thrift (*Armeria maritima*, Auct.) found in the Warren, Folkestone. Mr. Billups stated that this rare species of Braconidæ had hitherto only been recorded from Devonshire. At the close of the ordinary business there was an exhibition of microscopical objects, Mr. Tutt showing wings of Lepidoptera prepared and mounted by Mr. Coverdale and himself. Mr. W. West, of Streatham, eyes of spider and other entomological subjects. Mr. Dadswell, botanical objects. Mr. Macer, *Vespa vulgaris*, &c. Mr. Medland, proboscis of blow-fly, &c. Also an adoption of the electric light for microscopical and surgical purposes.

April 14th, 1887. The President in the chair. Mr. J. A. Cooper exhibited *Amphidasys strataria*, Hufn. Mr. C. A. Briggs, a large number of *Lycæna bellargus*, Rott., including many forms both of the male and the female, dwarfed forms, and some remarkable varieties of the under side; also another box containing a pale yellow form of *L. ægon*, Schiff., and varieties of the under side of *L. icarus*, Rott., and *L. astrarche*, Bgstr. Mr. Goldthwaite, living larvæ of *Pericallia syringaria*, L. Mr. R. Adkin, pupa-cases of *Eupæcilia ambiguella*, Hb., from the New Forest. Mr. T. R. Billups, fine specimens of the following Coleoptera: *Megalosoma typhon*, from Chili; *Xylotrupes gideon*, from the West Indies; *X. dichitomus*, from the Phillipine Isles; *Golofa centaurea*, from W. Africa; *G. hastatus*, from Mexico; and *G. alacus*, from Columbia; also three examples of the rare Lamellicorn, *Phæneus imperator*, Fab., from Chili; and contributed some interesting remarks on his exhibit. The Secretary read a letter from Mr. W. F. de V. Kane, referring to the capture by a friend of a sound-producing lepidopteron in the Gerallhpur Woods, India. Mr. T. D. A. Cockerell contributed a paper "On Variation."—H. W. BARKER, *Hon. Sec.*

REVIEWS.

British Pyralides, including the Pterophoridae. By JOHN HENRY LEECH, F.L.S., F.Z.S., &c. London: R. H. Porter, Tenterden Street. 1886. Cr. 8vo, 18 coloured plates.

IN his introduction Mr. Leech says, "The object of this treatise is to set before the student an illustrated list of the British examples of the group"; and we may add that such a work was greatly needed. It is something more than a mere list, for, although there is little pretension of original work on the part of the compiler, he has furnished us with pretty well all the published information up to the date of issue, collected from the current literature of his subject, especially with regard to descriptions of larvæ and localities of occurrence. The larval portion will be most useful to those studying the natural history of these moths, for it has been hitherto troublesome to hunt up any particular account from magazines extending over a long series of years.

Mr. Leech avoids all descriptions of the imagines, leaving the differential details to be gathered from the plates. This is rather a pity, for in nearly allied and variable species, as, for instance, in the genus *Scoparia*, a few words pointing out special characters and extremes of variation would have been most useful. If all species had been exactly like the individual specimen figured, identification by this illustrated list would have been easy enough; it is, however, otherwise, and hence the advantage of what we may hope will be added in a future edition. We do not quite understand the reason for the system adopted in choice of synonyms: would it not have been well to have used all if any?

In a prefatory note Mr. Leech advocates the flat system of setting in preference to the style usually adopted in this country. In these remarks we quite concur.

The plates are generally good, but there seems to be a slight want of sharpness in colouring, giving the idea in some instances of the figures having been taken from faded specimens. They are, however, sufficiently good for all ordinary identification.

The work cannot be described as a literary effort on the part of Mr. Leech, though it will be none the less useful in con-

sequence to those for whom it was intended. We trust, however, now that he has once "appeared in print," its compiler will use his exceptional opportunities to give the entomological world some of the results of his original investigations.—J. T. C.

Report of Observations of Injurious Insects and Common Farm Pests during the year 1886, with Method of Prevention and Remedy. Tenth Report. By ELEANOR A. ORMEROD. London: Simpkin, Marshall & Co. 1887.

MISS ORMEROD'S annual reports on injurious insects continue to increase both in size and interest. This tenth report, for the year 1886, runs to 112 royal 8vo pages, together with six pages of preface; and, as usual, is fully illustrated. Naturally the chief interest is centred in the full notice of the Hessian Fly (*Cecidomyia destructor*) and its attack in this country, recorded from such distant localities as Essex, Herts and Beds, Inverness and Perthshire. This occupies nearly seventeen pages, and is full of interesting and important detail, as might be expected from the painstaking author.

Other special reports are made on the "Tulip-root" disease of oats, probably due to a species of Anguillulidæ (nematode worms), similar to that causing cockle in wheat; and we can only hope that, now such detailed notice has been called to this pest, it may enable our agriculturists, especially in Scotland, where the disease seems prevalent, to assist Miss Ormerod in arriving at a fair knowledge of this apparently destructive pest during the present year. The Mustard Beetle (*Phædon betulæ*), whose attacks during the last two years have almost entirely stopped the cultivation of white mustard in my own district of Essex; Warbles (Estridæ); and many other better-known insect enemies are fully reported upon; and the information gained and so faithfully recorded should prove of value to all practical men, as well as of interest to all entomologists; and their gratitude must be expressed to Miss Ormerod's continued and self-denying efforts in supplying a want which has been so long felt in this country.—E. A. F.

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[No. 289.

LOCALITIES FOR BEGINNERS.

BY JOHN T. CARRINGTON, F.L.S.

No. XI.—THAMES SALT-MARSHES.

THE most convenient route for the collecting-ground near the mouth of the River Thames is by the London, Tilbury, and Southend Railway, from the London terminus in Fenchurch Street. The salt-marshes commence within twenty miles from London, but these are not quite so prolific, nor so accessible, as those somewhat farther down the line. A convenient station on the railway is Benfleet, which is close by the fine marsh skirting the creek which surrounds Canvey Island on the north side. On arrival at Benfleet we leave the station, and, instead of going into the small village, we turn eastwards for a few yards, when the road becomes, if it be low-water, a ford over the creek; but, if it be high-water, there is a ferry-boat in attendance.

Crossing the creek, we follow the high road for a little way, and see on either side of us two distinct types of salt-marsh; that on the right is by no means favourable for collecting insects, being too wet or boggy for comfort in walking, so we will leave it without further exploration. The plants most numerous represented are a *Chenopodium* and the salt-marsh samphire, each in luxuriant profusion. Continuing up the road there stands on the left-hand side a farmhouse, but before reaching it is a little pond within the sea-wall. Passing this pond we keep under the sea-wall along the side of the marsh for about half a mile, until we find the grassy portion of the marsh quite firm

and fairly dry. Then it is that we may commence work, which is most successfully conducted during the afternoon, and on until dusk on fine sunny afternoons from May until September. This drier portion of the marsh reaches for a couple of miles along the sea-wall towards the village of Leigh, beyond the ruined towers of ancient Hadleigh Castle, which rise on the hill-side to the left.

The flora surrounding us is now quite characteristic of the locality. Sea-lavender (*Statice limonium*) the handsome *Aster tripolium*, sea-wormwood (*Artemisia maritima*), and many others are closely growing in patches and in profusion, each forming the pabulum of some equally characteristically local lepidopteron.

Macro-Lepidoptera by day are decidedly scarce on salt-marshes, but the Micro-lepidopterologist will be well repaid for his afternoon's work. Among the sea-lavender the local plume moth, *Agdistis bennetti*, will be found from time to time during the afternoon, though just before dusk it appears in sufficient numbers to keep the collector busy with his net and boxes. These moths appear in June and August, while the larvæ may be found at night feeding on the leaves of sea-lavender. Few can be discovered in the day-time, though the plants having notched and riddled leaves should be searched for the curious little sphinx-like larva of this moth; but where one can be found by day many may be found by the aid of a light at night. Mr. South, in his admirable "Contributions to the History of the British Pterophori" (Entom. xvi. 27), describes and figures this larva, also a leaf of its food-plant, showing the curious mode of marking the leaf where they have been feeding.

Several species of Tortrices peculiar to salt-marshes abound in their seasons, *Eupacilia affinitana* and *E. rectisana* especially so, apparently all over the marsh. It requires only a gleam of afternoon sunshine to make these species flit about in abundance in June and July. By disturbing the *Artemisia*, *Catoptria candidulana* may be found, particularly where the plants grow on the marsh rather than by the sea-wall adjoining. The same plant should be examined in autumn and spring for the curious larvæ of the once very rare *Phorodesma smaragdaria*, which has recently become an example of the fallacy of rarities among Lepidoptera. Once its habits became understood it was found upon the very ground where we had been diligently working for

years. It is by no means common now, and requires patient attention to find and rear this beautiful insect.

I have never sugared in this locality, but have occasionally found odd noctuoids at rest, or started them from the herbage. Perhaps the best of these was *Mamestra abjecta*, which would not be uncommon at sugar. There is not much upon which the bait could be spread with satisfaction, and we should have to be very careful not to get bogged in the darkness.

One of the prizes of this inhospitable district is the rare little *Psyche*, *Epichnopteryx reticella*, a most difficult insect to find. It flies only in the brightest sunshine, and may easily be mistaken for a gnat, so small and obscure is it. When the knack of seeing these mites is once acquired a nice little series may be obtained.

Such are some of the moths frequenting salt-marshes. There are many others, including *Bombyx castrensis*, but it is not likely we shall visit the locality for pleasure, though many an interesting afternoon may be spent in summer in hunting over a salt-marsh for imagines, or in autumn for larvæ. Then we must give attention to the stems of the aster plants, and find therein larvæ of one of the two *Eupœcilie* just mentioned. I never worked the flowers of this plant at night, but they look very suggestive as an attraction for moths.

I will now indicate other similar localities, for although Benfleet is typical it is by no means one of the best. There are several nearer Thames Haven; Stanford-le-Hope is the best station, though some distance off. Farther down there is a good salt-marsh to the north of Shoeburyness, about half an hour's walk from the railway station, when we pass the sand-hills on the way, and may pick up other species than those peculiar to the locality described. In this marsh, which is not actually by the side of the Thames, but skirts the German Ocean, the sea-lavender is more abundant than at Benfleet. Here, too, the little *Psyche* has occurred in late years more plentifully than at Benfleet; the latter locality is much more rich in luxuriant beds of asters. Another fine marsh is to be reached by omnibus, which runs in connection with certain trains from Southend Station to Cricksey Ferry, which is on the River Crouch, near Burnham. Near the inn at Cricksey there are immense beds of *Statice*, the lavender flowers quite tinting the landscape as we

look over the otherwise barren scene. This is a very inhospitable district, and not easily worked, unless we stay in the quaint little town of Burnham, which is on the wrong side of the river.

On the south side of the Thames the first salt-marshes of consequence appear after passing Gravesend; the collecting there is apparently not so good as on the other side of the river, but still farther east are others in the Hundred of Hoo, and skirting both sides of the River Medway as far as and a little beyond the ancient city of Rochester, which are most extensive and characteristic. The marshes of the latter river are easily reached from Sheerness on the one side and Port Victoria on the other by South Eastern Railway. This series of marshes extends almost round the southern and western sides of the Island of Sheppy.

A phenomenon to be observed at high spring tides has frequently puzzled me, and given rise to much speculation while hunting for insects on salt-marshes, *viz.*, the fact that frequently the tide completely overflows the marshes, and for an hour or two turns our hunting-ground into an arm of the sea, with multitudes of rippling wavelets instead of our coveted collecting-ground. During this period there is not a sign of an insect flying over the water. As the tide recedes, and little islands of the taller plants appear through the water, we notice the first indication of moths appearing. When the water has left the marsh we examine the wet and sloppy ground, and find multitudes of delicate Tortrices and plumes in perfect condition, flitting about as though nothing had happened to disturb their comfort. Now, where were these moths when the tide covered the marsh some two or three feet deep? One can hardly imagine they were under the water all the time, though there was not a sign of them over it. Many times have I watched this rising and falling of the tide, but never solved the problem.

It is comparatively useless to visit these localities in windy or cloudy weather. Fine sunny afternoons are best, unless we go in for night-work, which I never had opportunity of trying; but under favourable conditions I should imagine that it would repay our labours with local additions to our collections. Salt-marshes are at best but dreary and weird, and far from picturesque. I have still a vivid recollection of staying until after dusk one autumn evening in one of these localities, when

a steady, heavy rain set in. A more depressing and melancholy scene could be imagined with difficulty. The only relief from the sound of the pattering rain was an occasional plaintive cry of plover or redwing disturbed by our presence.

Westminster, May, 1887.

NOTES ON THE NOTODONTIDÆ.

BY THE REV. BERNARD SMITH.

(Continued from p. 93.)

I may now proceed to the other maple prominent, *Lophopteryx cuculla*, whose history contrasts in many points with that of *Ptilophora plumigera*. If the latter likes the sun, the former emphatically prefers the deepest shade. If one comes out in a burst, the other continues coming out for more than a month. *Plumigera* may be seen in the perfect state at light; but *cuculla* is seldom seen, except in the breeding-cage.

I found the eggs of *cuculla* about 1856, in the same summer as the late Rev. H. Crewe, and in greater numbers, because I found them at the right time, *viz.*, the middle of July. The egg and young larva must be searched for on chalky hill-sides sloping to the north, in the densest shades of beech woods, on stunted maple bushes, and often within a few inches of the ground. A likely bush for the larva may be known by the blotches on the leaves, caused by the larva having eaten, when young, the under surface of the leaf.

The egg is greenish white at first; afterwards opalescent, showing the head of the larva through the transparent shell. An egg found in this stage is of more value, and a young larva is still more sure to do well. Eggs laid on green leaves are difficult to manage when the leaves dry up. They are better left till near the time of hatching. There are two varieties of this larva,—the brown or flesh-coloured, and the whitish-green. The green is scarcer, and does not produce the female, as sometimes asserted. The single red hump at the tail at once distinguishes even the green variety from *Lophopteryx camelina*. Whether the larva feeds up quickly depends on the warmth of the season; but I have never known it to be double-brooded, though an odd one has emerged in the autumn.

When full-fed some large fresh leaves of sycamore or lime may be laid on the surface of the earth in the cage, and the larva will spin up, just under or between the leaves, in a soft cocoon. The pupa should be kept dry, and is easy to manage.

This insect is well reared on sycamore, the large leaves of which give the needful shade. Though not very cannibal in its habits, large larvæ should be kept separate from small ones, which are otherwise apt to disappear.

The range of *cuculla* seems wider than that of *plumigera*. I have taken it on the chalk in South Bucks, Oxfordshire, and Berkshire; and known of its being taken, though more rarely, in Essex and Devonshire. It is more difficult to pair in confinement than *plumigera*; and the young larvæ are apt not to take to their food. Cloudy showery weather, however, and trees planted in the shade, partially overcome this difficulty.

There is a light variety of the imago, but the darker specimens are preferred by the collector; and the female sometimes attains a large size, if slowly grown on succulent leaves of the young sycamore. A larva of such exceptional size has been figured by the late Mr. Buckler, in his 'Larvæ of British Moths.' The larva of this moth is often stung, but its chief enemies seem to be the spiders, which will attack the egg and the young larva without mercy.

Fortunately neither of the maple prominents is inclined to grease; and no insect is more easy to set well than *L. cuculla*, and the specimens dry quickly and keep their form admirably.

Marlow, Bucks, May, 1887.

A CODE OF VARIETAL NOMENCLATURE.

By T. D. A. COCKERELL.

It has been generally recognised, by those who have studied the subject, that some form of nomenclature is advisable for application to varietal forms, just as it is universally applied to species and genera. A variety, therefore, is distinguished in nomenclature by a third or varietal name following the specific one;* and, as far as we have at present advanced, all the

* The letter "v." or "var.," indicating it to be a variety, is usually inserted between the varietal and specific names; but this is by no means necessary, and is not used by all naturalists.

ordinary rules for specific names have been held equally admissible for varietal ones. Thus we have *Triphæna orbona curtisii*, named after an individual; *Thera juniperata scotica*, after the country it inhabits; *Mamestra persicariæ unicolor*, having reference to the colour; and so on.

Considering this, and considering the nature and relations of varieties, it seems to me that while we are yet comparatively early in the history of the science, and the vast majority of varietal forms remain as yet unclassified, it is extremely necessary to make all possible arrangements for the simplification of the nomenclature. Of course to those who are studying a group in detail, and know well every varietal form within its limits, it will matter little what names they use, since one name is as good as another (if grammatical, and easy to pronounce and write), after once it has been fixed in the mind and associated with a certain known object. But when it is remembered how many species there are, and how each one will probably have at least one variety differing from the type, and variable species very many, it is quite clear that any but the strictest specialists will experience considerable difficulty in remembering the characters of named varieties, which difficulty would be greatly lessened if the names themselves were so contrived as to indicate the nature of the variation. This is, indeed, done in many cases; but what I wish now to propose is this:—That in all cases in which the *same* kind of variation is common to two or more species, some name shall be adopted which shall be used to distinguish the variety in whatever species it may occur, and shall, as far as possible, express the character of the variation; except when some other name has been proposed, in which case the rules of priority could not well be infringed.*

Example.—The red pigment of several species of moths, such as *Zygæna*, has a tendency to become altered to yellow, either by some change in the arrangement of its molecules, or by its splitting into a simpler compound. This change, whenever it occurs, may be expressed by the name "*lutescens*." For examples:—

Zygæna jilipendulæ lutescens. Entom., 1879, 225; Ent. Mo. Mag., 1877, 67.

* Unless some international committee were appointed, by the common consent of entomologists, to deal with such matters; and I hope that some day this may be done.

Z. trifolii lutescens. Entom., 1878, 102.

Charocampa porcellus lutescens. Entom., 1878, 169, and fig.

Calligenia miniata lutescens. Ent. Mo. Mag., 1879, 110.

Sesia culiciformis lutescens. Entom., 1878, 102.

Arctia caia lutescens. Entom., 1887 (S. Lond. Ent. Soc.).

Callimorpha hera lutescens, Stgr. Proc. S. Lond. Ent. Soc., 1885, 20.

C. dominula rossica, Kol. Staud. Cat., 1871.

Doubtless many other cases will occur to anyone, in which the same method might be adopted; for instance, *deletus* may be used for complete, and *subdeletus* for partial, suppression of spots or banding; *pallescens* for pale forms, such as are found in the Satyridæ; *suffusus*, *obscurus*, *nigrescens*, and *niger* for different degrees of suffusion or of melanism; *major* and *minor* for large and small forms, say one-third or more larger or smaller than the type.

Bedford Park, Chiswick, May, 1887.

[We insert Mr. Cockerell's suggestions without necessarily endorsing them. The trinomial system has some objections; but the subject is well worthy of discussion, and will doubtless receive the attention it deserves from our readers.—ED.]

NOTES ON SILK-PRODUCING BOMBYCES—1885.

BY ALFRED WAILLY.

(Membre-Lauréat de la Société d'Acclimatation de France.)

(Continued from p. 131.)

Antheræa pernyi, Guérin-Méneville. The Chinese Oak Silk-worm.—Moths emerged from cocoons from the 24th of April till about the end of June, a very unusual thing. In May, which is the ordinary month for the moths to emerge in northern countries, very few moths emerged in consequence of cold weather; it was the same with respect to some other species. Eggs of *pernyi*, received from Spain on the 22nd of April, hatched on the 20th of May. The rearings took place in the garden, and the larvæ, together with those of the hybrid *roylei-pernyi*, had the same fate as those of *yama-mai*.

I mentioned in my report for the year 1884 that a hybrid had

been obtained in Spain, by the crossing of *mylitta* male with *pernyi* female, and thirty cocoons of this hybrid were sent to me, the moths of which emerged from the 1st of May till the 6th of June. I did not notice any difference in the cocoons and moths of this hybrid from those of *pernyi*. I obtained six pairings, the last two being during the night of the 6th and 7th of June. The first moth, emerged on the 1st of May, was a male; the second, also a male, emerged on May 21th; from the 26th May to the 6th of June all the rest were out. Before the moths had commenced to emerge regularly, I had received a large quantity of eggs of this hybrid on the 8th of May, from my correspondent in Spain. These eggs commenced to hatch, like those of *pernyi*, on the 20th of May. The larvæ looked like those of *pernyi*, but a certain number were very peculiar, and if such differences occur with some larvæ of *pernyi*, I have not, as yet, noticed them. After the first moult, however, all the larvæ were alike. Those larvæ which differed from the others were ash-grey, which changed into a buff colour as they grew larger, and they were covered with long white hairs; the tubercles were black. In second stage, being all alike, they were emerald-green, covered with small white dots; tubercles, fine orange-yellow and black hairs; head brown. No further notes were taken. My impression has always been that a mistake was made with respect to the production of this hybrid *mylitta-pernyi*; and that although the pairing of these two different species seemed to have taken place, it had, in fact, not taken place. My correspondent, however, wrote to me a long letter, in which he asserted that the person who had the care of the silkworms was a very careful man, and that he had not made any mistake.

Antheræa mylitta, Fabricius.—This very important Indian wild silkworm has been reared in Europe by many entomologists on oak, and by some on hornbeam, *Carpinus betulus*. In 1885 one of my correspondents, who reared successfully several species, informed me that *mylitta* larvæ thrive well on plum. The cocoons, of which I had a very large quantity in 1885, commenced to hatch on the 8th of June, one moth however having emerged on the 12th of May. The moths continued to emerge till the 22nd of October. Four pairings only took place: the first, in early morning of the 6th of July, in open air; the second, in the house on the 7th of July, at 12.30 in the night;

the third, in the morning of the 13th of July; the fourth pairing took place on the 26th of July at 8.30 in the evening, and lasted twenty-four hours—286 were obtained from this last pairing. The eggs were sent to various correspondents, but no communications were sent to me respecting the result of the rearings.

Actias luna, Linn.—With twenty-one cocoons of this species, the moths of which emerged from the 6th of June to the 21st of June, only one pairing was obtained on the 12th of June, and the female died without laying any eggs. The moths, though small, were for the most part perfect. On the 10th of June there were five couples which were all placed in the open air in the garden, but no success was obtained, the weather being very unfavourable.

On the 3rd of July I received from my correspondent in Brooklyn a box of eggs, which hatched on the day of their arrival. Two other boxes I received on the 5th, but the larvæ had hatched and died in transit. On the 7th a larger box came, the larvæ hatching well, and there were about 400 in splendid condition nearly all hatched on the day the box arrived. I bred some of these larvæ on walnut, others on plum. The larvæ feeding on walnut grew rapidly, those on plum very slowly. Although *Actias luna* is very polyphagous in America, here it seems to thrive best on walnut. I discontinued the rearing of this and several other species at the end of July, shortly before my departure for Paris, when I entrusted the remaining larvæ and cocoons to a friend.

During my absence five or six little boxes of *luna* cocoons were sent to me from Brooklyn. With the exception of a few, all the cocoons hatched during the month of August, the moths pairing readily with the warm weather. Thousands of fertile ova were sent to me to Paris. These were distributed among several members of the Société d'Acclimatation and entomologists in various parts, but none of them, as far as I have been informed, succeeded in rearing the larvæ till the formation of the cocoons, the foliage having failed before that time. On my return to Norbiton, on the 1st of September, I found a box of *luna* ova received the day before I arrived at home, but the larvæ had nearly all hatched, and the few which were still alive soon died. On the 4th of September two more boxes of eggs arrived, and the larvæ of these hatched remarkably well. Several entomolo-

gists tried to rear them, but, like myself, they all failed; it was too late to rear these worms of the second generation, through want of proper foliage. My own larvæ lived in good condition till about the end of October, but from that time they began to die, the last one dying on the 21st of November. A great deal of trouble and expense had been incurred by me to arrive at a satisfactory result, but all in vain. The room where the larvæ were reared was heated, first with a large paraffin lamp, and afterwards with a stove, but I could only give them some old walnut leaves. I had collected a large quantity of these old leaves, which were kept in an air-tight iron box. I also tried other kinds of foliage. The last walnut-tree leaves had been touched by the frost, and the larvæ refused to eat them, and every other kind of foliage.

Of other species little can be said. Only three moths emerged from about fifty cocoons of *Cricula trifenestrata*, from Madras, which were all in very good condition, but the cold weather in May and June was fatal to them. It was the same with respect to *Attacus atlas* cocoons, which died through want of sufficient heat for the moths to emerge.

By means of the gas-stove (a stove which does not emit any smell) which I have had fitted in one of the rooms where I keep cocoons and rear larvæ, I intend in future to keep the cocoons at a warm and even temperature from the month of April, till all the moths have emerged and the eggs hatched. I hope thus to prevent all these losses.

Platysamia cecropia and *Callosamia promethea*, from North America, were a complete failure, a very unusual thing, but the number of cocoons I had of these species in 1885 was very small.

Attacus cynthia, the Ailanthus silkworm, was as usual very successful. The moths commenced to emerge on the 5th of July and nineteen pairings were obtained, the last having taken place on the 4th of August. Some of the cocoons were of my own rearing in the open air on lilac trees in my garden; the others had been sent to me from America, where the species is now well acclimatised.

Mr. C. G. Flemwell, one of my London correspondents, who successfully bred various species of silk producers, and obtained a number of cocoons of *A. pernyi*, *roylei-pernyi*, hybrid, *Actias*

luna, *Attacus Cynthia*, &c., kindly sent me a diary of his notes, which, commencing on the 20th of May and ending on the 5th of September, give an interesting and full account of the result obtained with the various species. He concludes by stating that he could not rear *mylitta* (the larvæ of which hatched on the 5th of September), nor any of the larvæ of the second broods, for want of food.

Tudor Villa, Norbiton, Surrey, March, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA WITH YELLOW BORDERS.—I am unable to gather whether Mr. S. J. Capper (Entom. 135) means that his British *V. antiopa* have white borders, or that English *V. antiopa* generally have, though his have not. I am in a position to state that three undoubtedly British specimens in my collection have borders that are quite as yellow as three continental (bred) insects that I have placed beside them for comparison. His friend M. Wurzburger's statements (1), "that no larvæ have been found in England," and (2) "that specimens captured in England are always hybernated specimens," might of course be checked by looking up the literature of previous years on the subject. But I must give a most emphatic denial to the other two statements in his letter (1), "that the English-caught specimens *always* have white borders," and (2) "that the wings are always more or less broken." My specimens (which were exhibited at the last Annual Meeting of the South London Entomological Society) can be brought forward to prove these last two points. It appears to me that the state of the fringes of an insect's wings is the most important evidence that it is a recent specimen, and has not flown much. The fading of the yellow border to white may occur; but I have not yet come across anyone who seemed to consider it a point of importance, as regards nationality.—PERCY RENDALL; 16, Little Grosvenor Street, W., May 3, 1887.

VANESSA ANTIOPA LARVÆ IN ENGLAND.—The gentleman who stated in his letter (Entom. 135) that *V. antiopa* was *never* found in England in the caterpillar stage is, I am afraid, wrong. I have an imago bred from one of twenty-seven larvæ found on a

willow, and of course with the yellow border. No doubt there are many other such instances. As the person who sent it gave it without even being asked, he would have no object in deceiving me. I have often noticed these white-bordered specimens of *V. antiopa* abroad, and they are never, so far as my experience goes, in very good condition.—K. DINGWALL; Knollys Croft, Leigham Court Road, Streatham, S.W.

DEILEPHILA LIVORNICA IN FEBRUARY.—On the 18th of April last an old servant, living with her father at Coles Cross, near Crewkerne, sent me a specimen of *Deilephila livornica*, which flew into their cottage (attracted by the light) in the beginning of February last. She states that they caught one last year, and that a neighbour took one the previous year, about the same date.—J. A. HELPS; Newstead Lodge, Westhall Road, Forest Hill, S.E., May 3, 1887.

HYBERNAL EMERGENCE OF *MACROGLOSSA STELLATARUM*.—On going, Dec. 11th, for the purpose of damping a breeding-cage, I was surprised to find a freshly-emerged specimen of *Macroglossa stellatarum*. Is not this an undue emergence? The caterpillar I found in September, and it turned to the pupa state at the end of that month. I have always been under the impression that Newman's statement of the appearance of this insect from January to December referred to hibernating specimens. The breeding-cage has been kept in a room, but without fire, and the temperature has only been just above 50° for some time, so there has been no forcing.—T. B. JEFFERYS; Clevedon.

PLUSIA NI IN DORSET.—My attention has been called to a note (Entom. 138), headed "*Plusia ni* in Hampshire," by Mr. Bankes, of Corfe Castle. He wishes me to state that it was caught in Dorset, some miles to the west of Bournemouth.—E. B. NEVINSON; 2, Elm Villas, Elm Row, Hampstead.

CROCALLIS ELINGUARIA, HATCHING OF OVA.—In reply to Mr. W. E. Butler (Entom. 138), I think I may say that the eggs of *C. elinguaris* invariably hatch in April, and that the larvæ never hibernate.—OWEN S. WILSON; Carmarthen.

CROCALLIS ELINGUARIA, HATCHING OF OVA.—Rössler, in his 'List of the Lepidoptera of Nassau,' says that *Crocallis elinguaris* hibernates in the egg state. This is undoubtedly correct, and agrees with my own experience. In August, 1878, I found some

eggs of this species. The first one hatched on the following 16th of February, and the last 7th of March. The larvæ then fed up well, and one moth emerged 29th June, which is an early date for this species.—ALFRED SICH; Burlington Lane, Chiswick.

LARVÆ OF *CROCALLIS ELINGUARIA*.—Referring to Mr. Butler's note on *Crocallis elinguaris* (Entom. 138), I have often bred the moth, but without the larva hybernating; and this agrees with the time given in Stainton's Manual for the appearance of the larva, viz., April and May. Whether the larva generally hibernates in the ovum I am unable to say. So far as I have had experience the ova are laid about the end of August or early in September, and do not hatch until the following March, sometimes so early in the month that it is difficult to obtain hawthorn (*Crataegus oxyacantha*) sufficiently advanced on which to feed the young larvæ. Last season I tried to rear *elinguaris* on that pretty and familiar variety of thorn, the red May of our pleasure gardens, but without success. I cannot account for my failure, and would like to know whether others have tried this food-plant and succeeded with it. With regard to the statement in Newman's work on 'British Moths,' that "it lives throughout the winter in the larva state about half-grown," I remember collecting a nearly full-grown larva in early spring some five or six years since, which I should say could not have arrived at that state of maturity without hibernating. More evidence, however, is desirable before hazarding a definite opinion on the subject. Yet the rule would appear to be that the larva does not hibernate; and it is for consideration whether any exceptional case might not be accounted for by hibernation taking place under abnormal conditions, such as premature appearance of the perfect insect favoured by an exceptionally warm and prolonged autumn.—GEO. J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W.

[Mr. E. Holton (Entom. ix. 88) states that in the early part of August, 1875, he captured a female *Crocallis elinguaris*, which deposited a batch of ova. Two larvæ hatched, March 4th, 1876, and the other eggs showed signs of "approaching fertility." On page 141 of the same volume, Mr. G. T. Porritt says that he "never knew an instance of this species hibernating in any other than the egg-state"; and Mr. T. H. Hedworth confirms Mr. Holton's experience, and adds, "I have bred the species for

four years from eggs deposited by captured females. I have invariably found them hibernate in that state, and commence hatching the last week in February."—R. S.]

PERIDEA TREPIDA IN ESSEX.—On May 16th I found two fine specimens, male and female, of *P. trepida*, on an oak trunk, near Brentwood. The female has laid over 300 eggs. Is it usual for members of the family Notodontidæ to lay so large a number of eggs?—R. G. WILLIMENT; Hon. Sec., Field Club, Brentwood.

TEPHROSIA CREPUSCULARIA.—The following notes concerning *Tephrosia crepuscularia* in this district during the present season may be of interest, although so much has been previously written in the 'Entomologist' on the subject. From the backward spring I did not observe any specimens until March 26th. I have usually seen them early in the month. On April 12th, amongst many specimens observed, I saw three, with the ground colour white. One of these, a female, apparently just emerged, I brought home, and placed with a brown-coloured male. I believe they copulated; however, this female deposited eggs, which have since proved fertile. The eggs were found laid in crevices of the breeding-box on April 25th; and another specimen, obtained by a friend and placed under a bell-glass, laid eggs underneath a piece of bark. It appears evidently from this that in the natural state the eggs are concealed under the bark of trees, as far as possible. The young larvæ commenced to hatch out on May 13th. I tried Scotch fir and larch, pear, and plum for their food, neither of which appeared to satisfy them. I then placed blackthorn, on which they immediately commenced to feed readily, although they appeared inclined somewhat to the larch. Here I find the imago chiefly in fir plantations, and have unearthed the pupæ at the foot of larch trees, so that it appears somewhat strange the larvæ not taking readily to the larch. When hatched the young larvæ were all of deep black colour, with white divisions of the segments. The first to appear, however, have already changed in colour, being now brown, with white divisions of the segments. They appear to be feeding up rapidly.—T. B. JEFFERYS; Clevedon, May 19.

EUPHILIA UDANA.—Is this insect really double-brooded? I am induced to ask this question from having been repeatedly told by entomologists that there are two broods in the year, the

imagines of the first emerging at the end of May and beginning of June, and the second in August. In January last year I collected a bundle of the flower-stems of *Alisma plantago*, in which larvæ of *E. udana* were then feeding, and stood them in my garden till about the middle of May, when I removed them to a large cage. The moths began to emerge in June, and continued to come out freely for a period of at least two months, during which I bred over a hundred specimens, six being taken from the cage on 7th August, and one or two stragglers after that date. I believe the larvæ feed only in the flower-stems of *Alisma plantago*, and these are not sufficiently advanced to nourish the larvæ of a second brood to appear in August. I am inclined to think there is but one brood, but would like to hear the opinions of others on the subject. Last year, owing to the backwardness of the season, the moths were two or three weeks later in appearance than usual.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E.

NOTES FROM HEREFORDSHIRE.—Two well-sheltered willow trees produced an enormous quantity of the genus *Teniocampa* during Easter week, viz., *T. stabilis*, *T. incerta (instabilis)*, *T. gothica*, *T. pulverulenta (cruda)*. Not quite so common were *T. gracilis*, *T. munda*, *Pachnobia leucographa*, and *P. rubricosa*. There also appeared freely *Scopelosoma satellitia* and *Cerastis vaccinii*, and one *Nylocampa arcola (lithoriza)*. A row of trees sugared (not 200 yards away from the willow) produced *C. vaccinii* in swarms, and occasional specimens of *S. satellitia* and *T. munda*; the proximity of the sugar to the willow trees is worth noticing. *Anticlea badiata* was the only Geometer that was to be found at the willow. Two specimens of *Amphidasys strataria (prodromaria)*, reared from pupæ, emerged early in the month.—JOHN LEA; 2, Elm Villas, Elm Row, Hampstead, April 18, 1887.

THE HEMP AGRIMONY AND LEPIDOPTERA.—It is well known that all the Umbelliferae are very attractive to insects, and particularly to Lepidoptera; but it is probable that none exceed in attractiveness the flowers of the hemp agrimony (*Eupatorium cannabinum*). In the Forest of Dean (in Gloucestershire) and also in the Forest of Wyre (in North-west Worcestershire) I have found this plant growing in great luxuriance, where also I have observed that it is an excellent resort of the Lepidoptera. On many occasions I have seen at least twenty butterflies, of various

species, so busily engaged disporting themselves on the honey that they could be easily captured with the fingers. Towards the latter end of last year, in the Forest of Dean, I well remember witnessing a glorious sight, for on one flower-head I counted nearly thirty butterflies all at once, and of these ten were *Vanessa io*. It was a sight which could not soon be forgotten. What has induced me to write this is that I wish to recommend the cultivation of the hemp agrimony (*Eupatorium cannabinum*) to all entomologists on account of the attraction it offers to insects. It is a tall plant, sometimes exceeding three feet in height. It grows principally in damp situations, preferring open spaces in woods in the vicinity of water. Its flowers, which are of a purplish hue, give off a rather sickly odour. When once seen it cannot easily be mistaken by anyone. It would, perhaps, be a good idea to sow the seeds of the plant everywhere in suitable localities, by the entomologist, near his hunting-grounds. He will be certain to reap a rich harvest with very little trouble. The plant used to occur in Sutton Park some years ago, but is, unfortunately, now extinct. Mr. J. E. Bagnall, our local leading botanist, informs me that it is found in several stations throughout the district. I think, however, that it must be very rare in the immediate neighbourhood of Birmingham, as I have never observed it growing there.—W. HARCOURT BATH; Ladywood, Birmingham, May 16, 1887.

THE BACKWARD SEASON.—On the 23rd of May I took a long walk, extending over about four hours, through sheltered woods in Hampshire. Although the sun shone brightly, and the air was warm in protected places, during the whole time I saw only *Pieris brassicæ*, one or two common hibernated *Vanessidæ*, and a single female *Diurnea fagella* among *Lepidoptera*. All other orders of insects were equally scarce. Spring flowers were in extraordinary abundance in the woods, there being in places perfect gardens of primroses, cowslips, oxlips, orchids, hyacinths, Solomon's-seal, germander-speedwell, tway-blade, and others in profusion. Not a sign was there of any spring butterflies beyond the common whites.—JOHN T. CARRINGTON; May 25, 1887.

BLENNOCAMPA ATTERIMA, *Klug*.—A female of this very rare species of *Tenthredinidæ* was taken by myself at Chobham in June last, clinging to the bloom of Solomon's-seal (*Polygonatum*

multiflorum), which was growing in profusion on the railway bank. This species has not, I think, been found since the time of Curtis, when a solitary specimen was taken at Putney by the present Earl of Ripon. Cameron gives as the food-plant of the larvæ, *Convallaria multiflora* and *C. polygonata*; and the continental range, Sweden, Holland, France, Germany, Italy, and Russia.—T. R. BILLUPS; 20, Swiss Villas, Coplestone Road, Peckham, S.E.

BLENNOCAMPA ALTERNIPES, *Klug.*—Another almost equally rare species of sawfly—first taken by myself at Loughton, Essex, in May, 1884, by sweeping, and described by Mr. Cameron in his 'Monograph of the British Phytophagous Hymenoptera,' vol. ii., p. 220—was again met with by myself in Headley Lane, in May last, on the plants of the wild raspberry, on which its larvæ feed. Cameron gives its continental distribution as Sweden, Germany, France.—T. R. BILLUPS.

HYDRÖUS PICEUS IN LONDON.—It may interest some of the readers of the 'Entomologist' to know that on the 30th June last I caught a fine specimen of this gigantic water-beetle, near St. Katherine's Docks, crawling on the pavement. Is not this a peculiar locality for such an insect?—A. J. FIELD; 359, Hornsey Road, Holloway, London, N.

CECIDOMYIA DESTRUCTOR.—The first imago of the spring brood of the Hessian Fly made its appearance a few days ago at Errol (Carse of Gowrie, Perth) amongst Mr. Taylor's isolated pupæ; this was sent to Miss Ormerod, and by her presented to Mr. Inchbald.—E. A. FITCH; Maldon, Essex, May 25, 1887.

PRACTICAL ENTOMOLOGY AT SOUTH KENSINGTON.—The Natural History branch of the British Museum in Cromwell Road has just received a most important donation from Lord Walsingham, consisting of a collection of Lepidoptera with their larvæ, mainly British butterflies (*Rhopalocera*) and certain families of moths (*Heterocera*), including *Sphingidæ*, *Bombyces*, *Pseudo-Bombyces*, *Noctuæ*, *Geometridæ*, and *Pyalidæ*. There is also a fine series of Indian species, collected and preserved at Dharmasala, in the Punjab, by the Rev. John H. Hocking; and specimens of Exotic silk-producing *Bombyces*, in various stages of their development, obtained mostly from Mons. Wailly. With very few exceptions, the British larvæ, which retain a most life-like appearance, and are placed upon models of the plants upon

which they feed, have been prepared and mounted by Lord Walsingham himself; the process adopted having been inflation of the empty skin of the caterpillar by means of a glass-tube and India-rubber spray-blower over a spirit-lamp guarded by wire gauze. This has been found a simpler and quicker process, and one admitting of more satisfactory manipulation, than the alternative system of baking by means of heated metal plates or ovens. The specimens have mostly retained their natural colour; but in the case of the bright green species it has been found necessary to introduce a little artificial dry pigment. The whole collection consists of 2540 specimens of larvæ, belonging to 776 species, together with a series of the perfect insects of each species. As continued exposure to light is, unfortunately, most detrimental to the colours of insects, this exhibition cannot be exhibited permanently; but, for the advantage of those who would like to see it without any restriction, it will be placed in the entrance-hall of the Museum for a period of six weeks, from May 16th to June 25th, so as to include the Whitsuntide holidays and the Jubilee week.

There are altogether ninety-six cases, about seventy containing the British collection, which is a most interesting one, both as regards imagos and larvæ. There are ten imagos of the extinct *Noctua subrosea*. Amongst the larvæ will be found eight of *Nola confusalis* from the New Forest, and two of *N. strigula*; in the Sesiidæ there is the rare larva of the alder-feeding *S. spegiformis*; the Bombyces are remarkably well represented and very attractive, with the numerous specimens of their robust larvæ. There are six imagos and eight larvæ of *Pygæra anachoreta* from Sparham, Norfolk, taken by Mr. F. Norgate in 1880. Amongst the Noctuæ there is much to interest, especially in a relative comparison of the much-alike larvæ of *Leucania*, *Agrotis*, *Noctua*, *Teniocampa*, *Cucullia*, &c. There are three larvæ of *Acronycta strigosa*, one of *Acosmetia caliginosa*, eight of *Agrotis ashworthii*, five from Mr. Meek and three from Mrs. Hutchinson. The Dianthæciæ are very interesting and pretty; there are three larvæ of *D. cæsia* and seven of *D. irregularis*; *Polia xanthomista* is represented by three larvæ. Amongst *Hadena* there are three larvæ of *H. glauca* from Mr. Prest. There is a beautiful specimen of the beautiful larva of *Calocampa exoleta*, which is almost rivalled by the two *Cucullia chamomillæ*; there are four *Anarta melanopa*

larvæ from Mr. Porritt, and one *Agrophila trabealis* (*sulphuralis*) from Mr. Farn; also two of Mr. South's North Devon larvæ of *Toxocampa craccæ*. Although the larvæ of the Geometridæ are less striking, they are none the less interesting, and many species are fully represented in several varieties; there are six larvæ of the local *Epione paralellaria* (*respertaria*), and six of the as local *Nyssia zonaria*; four imagos and four larvæ (beautiful specimens) of *Phorodesma smaragdaria*, taken in Essex, 11th June, 1884; the curious mottled larva of *Asthena blomeri*. The Eupitheciæ are very full, containing four larvæ of *E. debilitata*; there are two larvæ of the rare *Cidaria reticulata*, and many others of like interest which it is difficult to particularise.

A NEW METHOD OF SUGARING.—Judging of others by my own experiences, probably field naturalists have been at times exercised how to lay their bait when desirous of sugaring large open spaces, such as the sea-shore, sand-hills, the edge of cliffs, open fields, and other similar places where no friendly trees or palings are within reasonable distance. I, therefore, extract the following from the 'Societas Entomologica' for May. Dr. R. Benteli, of Bern, writes:—"I have adopted the following plan for several seasons:—Take an old umbrella, open it, join the extremities of the ribs by string so as to keep them in position, and then cut away the silk entirely; attach to the extremity of each rib a small ring, and on this hang, by means of a piece of bent wire forming a hook, a short piece of string, to the other end of which a piece of sponge, about the size of a fist, is attached, which has been lightly dipped in any bait that may be preferred. Cut away the handle of the umbrella, so as to fix it at at will into another stick of two or three feet long, provided at one end with a socket in which to fit it, and at the other end with an iron point by which to fix it firmly into the ground. I have five of such skeleton umbrellas. When closed they pack into a light box of about three feet long and a few inches square, which can be carried over the shoulder by a leather strap, and the whole weighs less than five pounds. The bait is carried in a tin box. I am thus ready to go into, or out of, action in a few minutes, and can try many places otherwise very tedious to work." The writer seems ignorant of our English plan of sugaring trees, for he joins them by a stout string provided at intervals with small rings, and to this hangs his bait, in a

similar manner to that described above. Pieces of dried apple threaded on the string, or pieces of sponge dipped in apple-juice, appears his usual bait; but this may arise from the prevalent idea that beet-root sugar, which alone is in general use abroad, is not attractive to insects.—N. F. DOBREE; Beverley, E. Yorks.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *May 4th, 1887.* Dr. David Sharp, F.Z.S., President, in the chair. The Rev. C. Ellis-Stevens, B.D., of Brooklyn, New York, U.S.A.; Mr. Frederic Merrifield, of 24, Vernon Terrace, Brighton; Mr. Henry Rowland Brown, B.A., of Oxhey Grove, Stanmore; and Mr. Coryndon Matthews, of Ivybridge, Devon, were elected Fellows. Mr. Wm. Warren exhibited a specimen of *Euzophora oblitella*, Z., caught in the Isle of Wight; and, for purposes of comparison, a pair of *Stigmonota pallifrontana*, Z. (a species taken several years ago by Mr. W. Thompson, of Stoney Stratford), and a pair of *S. internana*, Gn., with which the former had been, till lately, confounded. He also exhibited specimens of *Asthenia pygmæana*, Hb., another species new to Britain, and *A. abiegana* (Dup.) (*subsequana*, Haw.). Mr. Stainton remarked that the two last-named species, *Asthenia pygmæana* and *A. abiegana*, both had white underwings, and were in other respects very similar. It was formerly thought that Haworth's *subsequana* was identical with the species previously figured by Hübner as *pygmæana*; but now that the two allied species were critically examined it appeared that the species described by Haworth as *subsequana* was not Hübner's *pygmæana*, but another species known as the *abiegana* of Duponchel, dating only from 1842, so that Haworth's name *subsequana* had priority by thirty years. Mr. F. Pascoe exhibited a specimen of *Dixanines taylori* (Wath.), taken out of the stem of an orchid—*Saccolabium cæleste*—growing in an orchid-house at Croydon, and received from Moulmein, in Burmah. Mr. M'Lachlan exhibited nearly 200 specimens of Neuroptera, in beautiful condition, collected by Mr. E. Meyrick in various parts of Australia and Tasmania, comprising about seventy species. There were between forty and fifty species of Trichoptera, including moth-like forms from Western Australia, allied to *Plectrotarsus*, Kol.; and other

species belonging to a group represented by *Hydropsyche edwardsii* (M'Lach.). Among the Planipennia the most remarkable insect was a new species of the singular genus *Psychopsis* (Newm.), from Mount Kosciusko, where it was common. Of Pseudo-Neuroptera there was a species of *Embiide* from Western Australia, and certain curious *Psocide* and *Perlidae*. The Trichoptera appeared to be exclusively confined to *Sericostomatide*, *Leptoeride*, and *Hydropsychide*. Mr. Meyrick made some remarks on the localities in which he had collected the species. Mr. M. Jacoby exhibited three specimens of a new species of *Xenarthra*, collected by Mr. G. Lewis in Ceylon; also a species of *Loxoprosopus* from Brazil. Mr. C. O. Waterhouse exhibited a living example of an Ichneumon—*Ophion macrurum*—bred from a larva of *Callosamia promethea*, a North-American species of *Saturnide*. He also exhibited a number of wings of Lepidoptera denuded of the scales, in order to show the venuration for study, and explained the method he had adopted for removing the scales. The wings were first dipped in spirit and then placed in *eau de javelle* (potassium hyperchlorite). Mr. Waterhouse said he had sometimes substituted peroxide of hydrogen for *eau de javelle*, but the action was much less rapid, although the results were satisfactory. Mr. Poulton observed that, although the pigment had disappeared, he thought the scales were not removed, but were merely rendered transparent; and he remarked that the discovery of some chemical for softening chitine had long been wanted to prepare specimens for the microscope. The discussion was continued by Mr. M'Lachlan and Dr. Sharp. Mr. Slater read a note, extracted from the 'Medical Press,' on the subject of the poison used by certain tribes of African Bushmen in the preparation of their arrows. It was stated that a poison was prepared by them from the entrails of a caterpillar which they call "N'gwa." The Rev. W. W. Fowler read a note received from Mr. J. Gardner, of Hartlepool, in which it was stated that *Dytiscus marginalis* possessed the power of making a loud buzzing noise like that of a humble bee. Dr. Sharp said he was familiar with the humming of *Dytiscus marginalis* previous to flight, and thought it might perhaps be connected with an inflation of the body for the purpose of diminishing the specific gravity of the insect; he had noticed also that it was occasionally accompanied by the discharge of fluid from the body. Mr. Wm. White read a paper "On the

Occurrence of Anomalous Spots on Lepidopterous Larvæ." A discussion ensued, in which Mr. Poulton and others took part. Mr. Waterhouse read "Descriptions of New Genera and Species of *Buprestidæ*."—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 28th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Mr. Helps exhibited *Deilephila livornica* from Coles Cross, near Crewkerne. Mr. Lea, *Tæniocampa munda*, *T. gracilis*, and *Pachnobia leucographa*, taken in Herefordshire at fallow. Mr. South, forms of *Lycæna corydon* and *L. bellargus*; also a specimen of the genus *Zygæna*, which he stated was probably hybrid between *Zygæna triolii* and *Z. filipendulæ*. Mr. Sheldon, red and clay-coloured forms of *Tæniocampa pulverulenta*, one specimen having the upper surfaces of the wings on one side red and on the other clay-coloured; also a series of *Scoparia angustea*. Mr. Tugwell, bred examples of *Cidaria suffumata*, *Nyssia hispidaria*, *Hybernia marginaria* var. *fuscata*. Mr. Jager, *Eupithecia pumilata*, bred from flowers of clematis and hemp agrimony. Mr. Adkin, very large specimens of *Anticlea badiata*, reared from ova. Mr. S. Edwards, a long series of *Papilio merope*, and Mr. J. Jenner Weir made some observations thereon. Mr. Billups, exotic species of Coleoptera, comprising examples of the family Scarabæidæ, including the genera *Phænæus*, *Onthophagus*, and *Gymnopleurus*; he also exhibited, on behalf of Mr. W. F. de V. Kane, examples of *Mesites tardii*, from Monaghan, Ireland. Mr. J. E. Kelsall contributed a paper on British Bats.

May 12th, 1887. The President in the chair. Mr. Cooper exhibited bred examples of *Aleucis pictaria*, *Macaria alternata*, and *Asphalia ridens* from Epping Forest, and *Spilosoma mendica* from Wanstead Flats. Mr. Cockerell exhibited species of Mollusca and contributed notes, and Mr. Kelsall specimens of Newts and contributed notes.—H. W. BARKER, *Hon. Sec.*

OBITUARY.

REV. JOHN HELLINS.—The Rev. John Hellins died, somewhat suddenly, early on the morning of May 9th, at his residence in the Cathedral Close, Exeter. The cause of death was erysipelas in the throat; his age was fifty-eight. For the last thirty years

his name has been familiar to all readers of the 'Entomologist's Weekly Intelligencer' and the 'Entomologist's Monthly Magazine'; and, in co-operation with the late William Buckler, he succeeded in tracing the life-histories of a large number of our Lepidoptera. The first volume of Buckler's 'Larvæ of the British Butterflies and Moths' contains a most valuable appendix by Mr. Hellins, describing the life-histories of twenty-five of our butterflies, with notes on one or two others. These are described by the talented and regretted author as "stop-gaps"; but they are very necessary and very good ones, especially as they were almost entirely prepared at short notice in the year 1885. The "stop-gaps" in the recently-issued second volume exceed the original matter in length, and treat more or less fully of forty-six species. Well may the editor write:—"The Rev. John Hellins has not only exerted himself, but has enlisted the aid of his friends to an extraordinary degree." We fear this good work and all lepidopterists will greatly feel the loss we so much regret. Mr. Hellins was for some time in early life a master in the Exeter Grammar School; and in 1859 succeeded his father as chaplain to the Devon county prison, which position he resigned some six or seven years ago on account of ill-health. This also affected his entomological work; but it was remarkable, to those who knew the nature of his failing, with what zeal he returned to his former labours of love, both in the church and with his insects. The work contained in the two volumes alluded to are a sufficient monument; but all will deeply regret it cannot be completed. It was indeed a labour of love with him, as far as possible, to complete the work of his lost friend and coadjutor; and would that it had been permitted him to do so.—E. A. F.

THOMAS WILSON.—Many readers, especially in Yorkshire, will regret to learn of the death of Thomas Wilson, of Holgate, York, which occurred on the 17th April, aged fifty-one years. He was one of the oldest York entomologists, having been a collector of Lepidoptera for over thirty years. His attention, however, was chiefly given of late years to the Tenthredinidæ, of which he leaves a good collection. His contributions to the 'Entomologist' and 'Naturalist' were numerous; and he was engaged, up to a few days of his death, upon a list of the Macro- and Micro-Lepidoptera of York and district. He leaves a widow and five children.—SAMUEL WALKER; 8, Neville Street, York.

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[No. 290.

THE HESSIAN FLY IN GREAT BRITAIN.

It may seem almost supererogatory, since we are told by Dr. Herbert Loew, of Posen, that a "small library has been written on the subject of *C. destructor*," to attempt to add our mite to the vast store of information that has been worked out for us so generously and perseveringly by scientists in Europe and America. Dr. Packard tells us that the number of writers down to 1883 is fifty-six, and that number has certainly increased and multiplied itself, in proportion as the destruction caused by the gall-gnat has extended its area. It was detected, it would seem, in Europe in 1834, in the Island of Minorca, by Messrs. Dana and Herrick, though it has continued its ravages, with more or less of intermission, for really upwards of a century. In America it appears to have thriven indeed since 1776. And here let it be remarked that it has extended its ravages on a larger scale than in Europe—from the sea-board of the Atlantic to Kansas, and from the Gulf of Mexico to the Lakes and the River of St. Lawrence.

On July 27th, 1886, the first specimens of puparia, as Miss Ormerod informs us in her pamphlet, were sent to her from Hertford, from barley-fields cultivated by Mr. G. E. Palmer. In Essex the puparia appeared on wheat, the case showing the striations that would seem to adapt it to the culms, even more conspicuously. I am especially indebted to Mr. D. Taylor, jun., of Daleally Farm, Errol, near Perth, who has most kindly sent me the puparia on three several occasions during the spring months, and has thus enabled me to hatch the tenants. I have

reared from this bountiful supply about twenty specimens of the gnat, both males and females. Two of these were sent alive to Dr. Meade, of Bradford, to examine, and I append below the results of his careful and closely observed diagnosis. My first Cecid, a male, appeared on May 29th; the 30th yielded me two females, and the imagines have continued to emerge sparingly ever since, mostly every other morning. *C. destructor* is a great lover of moisture, and I would suggest to all who seek to rear it, that the glass-topped boxes should be well sprinkled with water, and that Hypnum-moss should be introduced therein. We thus assimilate Nature, that never errs in her ways and means, and recall, it may be, the dew-clad culms and herbage of the corn-plant. There are two broods in the year; the second brood, we are told, appears in August or early in September. Each female would seem to lay fifty eggs or more on the young winter or spring wheat.

PETER INCHBALD.

Fulwith Grange, Harrogate, June, 1887.

CECIDOMYIA DESTRUCTOR, Say. The Hessian Fly.

This fly has been so often described that it seems almost superfluous to go over the same ground again; but my excuse must be that no complete scientific diagnosis has hitherto been published in any *British* entomological work; and as the gnat has found its way into this country, and may exercise great influence in the agricultural world, a technical account taken from *living* specimens, which will enable the fly to be recognised by entomologists, may not be without its value.

C. destructor, Say.

Thorax niger. Abdomen carnosum, feminâ maculis nigris quadratis disjunctis, mare confluentibus, signatum. Antennæ 17-articulatæ, mare petiolatæ, feminâ sessiles. Epistoma cirro nigro instructo. Pedes testacei nigro-hirti. Alæ nigrescentes, radicibus rufis. Long. mas. 2, fem. 3 mm.

FEMALE.—The female being the larger, more abundant, and more characteristic sex, I shall first describe it, and then mention the distinctive points of the male.

Head. Eyes, with forehead and occiput, black, the last clothed with thick and strong black hairs. Epistome prominent, and furnished with a tuft of black hairs. Palpi yellow, the four joints

being partly covered with black scales, which are more numerous on the second than on the first and third divisions, and entirely cover the terminal joint. Proboscis very small, and of a pink colour. Antennæ rather more than a third of the length of the body, yellowish brown, consisting of seventeen joints shortly verticillated with black hairs. The two basal joints are nearly twice as thick as the others; the first is club- or rather cup-shaped; the second nearly globular; the next are all smooth and cylindrical (turning irregular in size and shape when dry), about twice as long as broad, becoming gradually rather smaller towards the end, and terminating in an elongated tapering joint, which is about half as long again as the one before it. Collar or neck pinkish yellow.

Thorax black, with grey reflections, having a few scattered white hairs on the sides, and two indistinct lines of thinly placed white hairs along the dorso-central region.* A pinkish red irregular-shaped streak or patch runs from the side of the neck along the lower side of the thorax to the base of the wing. *Scutellum* black, prominent, and crested with black hairs. *Halteres* pale red, irregularly clothed with patches of black scales.

Abdomen pinkish or yellowish brown, with eight segments; the first is nearly black; all the others are marked on each side of the dorsum with a large square velvet-black spot, which spots are separated by a considerable longitudinal space from those on the opposite side on all the intermediate segments, but become nearly confluent on the seventh and eighth joints.† A single row of similar large square spots runs down the centre of the ventral surface. The oviduct consists of three joints; the basal one is thick and rounded, the second and third are cylindrical, the last one being of about half the diameter of the second, pointed, and without lamellæ. They are all pale red, the terminal one being brown at the tip.

Legs pink, becoming brownish yellow after death, clothed irregularly with black scale-like hairs, which are generally thicker in the neighbourhood of the joints. The coxæ are brown, the short fore femora or trochanters black, the others yellowish brown.

* See Osten-Sacken's Essay on Comparative Chætotaxy.

† Miss Ormerod, in her excellent paper upon the Hessian Fly, has described a small V-shaped mark on the back of the seventh and eighth segments. I was not so fortunate as to see it in the specimen which I examined.

The ends of the tarsi and fore tibiæ are generally darker than the other parts.

Wings pink at the roots, and clothed with black hairs; the second longitudinal vein runs nearly straight until near its extremity, when it curves slightly down and reaches the border of the wing a little above (or before) the apex. The third longitudinal vein gives off its descending branch in the usual way, which reaches the hind margin of the wing at a point exactly opposite the termination of the first longitudinal vein.

MALE. — The male insect differs from the female by being about one-third shorter, and much more slender. The antennæ have the same number of joints (seventeen), are pedunculated, and proportionally longer, being about two-thirds of the length of the body. The joints are ovoid in shape, becoming nearly globular towards the end. The terminal joint is not longer than the others, as in the female. The stalks are about half as long as the joints. The verticellar bristles are much longer than those in the female, and white in colour. The tuft of hairs on the end of the scutellum is also white.

The *abdomen* is almost black, with a pink extremity, but is really marked in the same way as the female, with large square black spots, only being very slender they coalesce; thus the two lateral rows cover the dorsum, only leaving a narrow pink line



Male genital organs from above.

down the centre, which is sometimes indistinct, and a pale streak across the edge of each segment. The spots on the ventral aspect hide the underlying colour altogether. The last joint of the abdomen is of a pale pink colour, and is provided with a pair of claspers or forceps of a brown colour, between which are seated

the generative organs, the peculiar structure of which is now found to be of great importance in the determination of nearly allied species among various insects, but which it is very difficult to describe without the aid of figures. Two thick blunt processes, which project forwards, are placed between the roots of the forceps, each of which has a small rounded eminence on its extremity. Beneath and behind these, occupying a central position, is an elongated tapering organ extending nearly to the joints of the claws of the claspers, which is flanked on each side by a flattened hairy process with a dilated extremity. These organs are of a pink colour.

The *legs* are rather paler than those of the female; the fore *coxæ* are pink.

The *wings* are proportionably longer than in the female, and less nigrescent. Mr. Inchbald tells me that when they are first expanded, "a ruddy tinge is observable throughout the wing." This is less conspicuous in the female.

R. H. MEADE.

1, Mount Royd, Bradford, June 15, 1887.

REPORTED OCCURRENCE OF *POLYOMMATUS GORDIUS* IN DEVONSHIRE.

MR. F. G. JOHNSON, a pupil at the Rev. T. Cross's, The Old House, Blundells School, Tiverton, Devonshire, writes under date of May 25th:—"I caught at Tiverton, in July last year (1886), a copper butterfly, which has since been examined at the Natural History Museum, and is pronounced to be the variety *hipponox* of *Polyommatus gordius*."

Dr. Lang, in 'Butterflies of Europe,' plate xxi., fig. 2, portrays male and female of the typical *gordius*, which is a very conspicuous insect, expanding from 1.16 to 1.40 in. The habitat is given, "Valleys in Switzerland and the Tyrol, South-Western Europe, and Sicily." He does not mention this variety.

Upon enquiry we are informed that Mr. Johnson is beyond doubt as to *bonâ fides*. It would nevertheless be most desirable to try to find other specimens before accepting this butterfly as a British species.

JOHN T. CARRINGTON.

Westminster, S.W., June 15, 1887.

THE LATE SEASON IN KENT.

BY J. W. TETT, F.E.S.

FOLLOWING one of the heaviest rainfalls on record,—Thursday night and Friday,—Saturday, June 4th, was a glorious day in North Kent. Having been a close prisoner in Strood, owing to the rain, on Thursday and Friday, I made an early start on Saturday morning. Reaching Cuxton shortly after 10 a.m., I made at once for the chalk-hills, and expected to be soon at work. So I was; and my total, at the end of two hours hard work, was *nil*. One *Nisoniades tages*, three or four *Cænonympha pamphilus*, and *Lycæna icarus* were all I had seen.

Making my way into a clearing in the adjoining woods, I fared a little better. *Acipitilia galactodactyla* larvæ, about as large as they usually are at Easter, were more sparing than usual; and here I took *Lycæna argiolus* flying over the blue-bells. I learnt that this species frequented the blue-bell flowers from a Yorkshire correspondent, only a fortnight ago. *Euchloë cardamines* was apparently just out. I netted a few (all males), and found they were in splendid condition; one male I kept, a fine variety. The edge of the costa of the anterior wings is broadly orange, and the tip of the wings, instead of being of the ordinary blackish colour, is much suffused with orange, which gives it a peculiar golden colour, very different to the ordinary "orange" colour at the apex of the wing; altogether it is a beautiful insect. Here also I found *Penthina gentiana* (larvæ and pupæ) in the teasel-heads. Some of the larvæ were not more than half-fed, whilst one of the moths emerged yesterday morning (June 5th). This insect must be on the wing an enormous time; some of the smaller larvæ I obtained cannot emerge, I should say, for at least six weeks or a couple of months. *Eupæcilia maculosana* and *Venilia macularia* were flying freely.

Passing out of the clearing again I made for a sunny bank, where I can always take, in the early summer, *Panacalia lewenhoekella* and the probably *pseudo-lutreillella*. They were in some plenty, but they are difficult to see, and a great deal of care is wanted to make up even a small series. I cannot help thinking that the stumpy form and want of white scales in the antennæ of

male specimens, supposed to be characteristic of *latreillella*, is anything but an artificial separation. I can get them of all sizes, —some exceedingly small, some comparatively large,—flying together at the same time. The fine ones are sometimes large and sometimes small; but worn ones have very few, if any, white scales on the antennæ, whether large or small. As it was now nearly 3 p.m., I tried a little beating on the edge of the wood, and at the end of half an hour had scored one *Botys pandalis* and one *Bapta bimaculata* (*taminata*); the former was well up to time, the latter generally occurs here about three weeks earlier. The pretty little *Asthena candidata* was common. I also beat a fine specimen of *Phocopteryx derasana* out of blackthorn. After 4 p.m. matters gradually improved, a short series of *Argyrolepis subbaumanniana* was obtained; a very early date for this species; I generally take it from the end of June to the end of July. Is this a late spring brood? Longer series of *Dicrorampha plumbagana*, *Pyrausta purpuralis*, *Eriopsela fractifasciana*, *Ennychia nigrata*, and *Phytometra viridaria* (*cenea*) were netted, flitting about the flowers on the banks. *Cochylis alceella* (*tesserana*) was just appearing, as were also *Euprecilia anthemidana*, *Sciaphila hybridana*, *Catoptria ulicetana*, *Ephippiphora trigeminana*, *Crambus pratellus*, and *Anaitis plagiata*. I also took an odd specimen of *Penthina sellana*, for which it is an early date, June 20th to July 5th being the usual time. An odd specimen of *Bapta temerata*, and a freshly-emerged female *Phalera bucephala* were picked off the grass; and two little *Gelechias* still puzzle me. *Nisoniades tages*, *Syrichthus alceolus*, *Pieris napi*, and *P. brassicæ* now and again crossed my path; but of *Lycæna bellargus*, *L. astrarche*, *L. minima*, and *Argynnis euphrosyne*, generally in swarms at this time of the year, I did not see a specimen.

Hybernated females of *Gonepteryx rhamni* were busy ovipositing on the buckthorn on the edges of the wood. Of the Tineinæ very few were on the move. The common Lithocolletidæ were only just appearing, and nothing like fully out. A few *Ornix betulæ* and *O. anglicella*, with odd specimens of *Elachista cygnipennella*, *E. pollinariella*, and a few other equally common species, made up the total of one of the poorest day's work I have done for the last fifteen years, at this time of the year.

The season is altogether out of time, and I should say nearly

a month late. I saw very little (except *A. subbaumanniana* and *P. sellana*) that ought not to have been expected fully a month ago. The vegetation, however, looks beautiful, and the clearings in the woods are magnificent,—blue-bells, columbine, speedwell, primroses, forget-me-not, and orchids vying with each other, and making a sight that defies description. The trees, I am pleased to say, are infested to a remarkable degree with Tortrix larvæ, so probably we shall have a little livelier time later, than we have just at present.

Blackheath, June 6, 1887.

NOTES ON *VANESSA ANTIOPA*.

BY REV. F. A. WALKER, D.D., F.L.S.

I HAVE been given to understand that British and Swedish specimens of this butterfly had white borders, and that those from the South of France and elsewhere on the Continent had yellow. My own experience on the subject is as follows:—

All the specimens of *V. antiopa*, without exception, that I have seen exposed for sale at any of the London dealers have had yellow borders.

I have nine specimens in my collection, labelled N. America, all with yellow borders. To the best of my recollection these came from Ontario, and were purchased from Mr. Higgins, then of 24, Bloomsbury Street; though it is possible that one or two French or German specimens have accidentally got mixed with them.

On two occasions, on my purchasing a cheap lot of British insects from working people, I have found the collections to contain a couple of *V. antiopa* with yellow borders; but these were at once admitted to be continental—there was no attempt to pass them off as British.

I have two specimens in my collection, labelled Europe, with yellow borders. One of these two is in singularly fine condition and as large as any, and larger than most that I possess; and is, moreover, of historic interest, having been caught, as well as many more butterflies, by the late John Curtis, F.L.S., author of 'British Entomology,' Francis Walker, F.L.S., and Henry

Walker, in their memorable tour in the South of France in the summer of 1830.

I have only seen two specimens of *V. antiopa* alive—one that I failed to capture in the Black Forest in the summer of 1857, and really do not recollect the colour of its borders; the other I caught on ivy blossoms on a low wall on the hill-side above Menaggio, Lake of Como, in the summer of 1872. This one has yellow borders, but somewhat faded compared with my other specimens, and is otherwise not in first-rate condition. Not being familiar with this insect in a living state, I failed to recognise it until I had taken it out of the net, having been under the impression that I had succeeded in capturing one of the large Satyrids, *Minois proserpina* or *M. hermione*, for example.

I have two specimens, beyond all question British, with white borders, of which the history is as follows:—Both are from the grounds of Arnos Grove, Southgate, and are the worse for wear, possibly from not having passed through the hands of an entomologist in the first instance. One was captured flying by or across the New River, I believe by someone fishing at the time. The other was caught by a boy or boys of the school at the bottom of the Cottage Walk, Arnos Grove, and given by the schoolmaster to my father. I cannot speak positively as to the date, whether 1820 or 1830, but am fully persuaded that it was at least, if not more than, fifty years ago.

When staying at the house of a relative, Little Heath, Potter's Bar, I was given to understand that some haymakers had noticed some large butterflies while they were at work, and on proceeding to question them on the subject, was told that the said insects (*V. antiopa*?) had "a sulphureous band all round them."

I believe that the yellow borders are far more frequent than the white, and also that the butterfly was far commoner in this country towards the end of the last century than it is at present.

It may be remarked, in conclusion, that *V. antiopa* is more variable in size than any other of our English Vanessas. Large specimens probably exceed in size any of the Vanessidæ, except such monarchs of the race as the African *Junonia anacardii*, *Salmacis amarantha*, and the like.

Dun Mallard, Cricklewood, N.W., June 1, 1887.

THE METAMORPHOSES OF *GALERUCA NYMPHÆA*, LINN.

BY H. E. QUILTER.

WHILE out by the side of Groby Pool, one Saturday afternoon early in July, 1886, I noticed and admired the show of *Polygonum amphibium*, L., which was then in bloom. I was thinking over the modifications the plant must have undergone to adapt itself to being amphibious, as at the same time the year before, owing to the drought, the water had gone down, and the plant was flowering on a dry beach.

My attention, however, was soon attracted by the fact that upon the upper surface of the long floating leaves—so characteristic of this plant—were numerous insect larvæ. An examination soon convinced me that they were the larvæ of a coleopterous insect. Noting also that they were preparing to pupate, I took home a quantity upon the leaves. They were generally clustered together upon the upper surface, but some had crawled upon the stalks of grass growing out of the water. Placing them in a box with a glass lid, I had the pleasure of watching the insect through the later stages of its metamorphosis. Owing to the difficulty, generally, of observing the changes undergone by beetles, the observation of them, even in the commoner species, is of interest; but when the beetle is uncommon, as in this instance, the interest and utility is augmented.

The earlier stages of this beetle are as yet, so far as I am aware,* unknown; when and where the parent insect deposits its eggs, so that the larvæ upon leaving the egg can feed upon an aquatic plant, is somewhat puzzling, especially when we recollect that the insect is not an inhabitant of the water. I may perhaps be allowed to suggest that, from what I saw of the habits of the perfect insect, the parent deposits its eggs at the roots—which are generally left dry or partially so about that time of the year—of the plant upon which the larvæ subsequently feed, and that the larvæ are consequently aquatic, coming up out of the water, as already noted, to pupate upon the leaves and stalks of aquatic plants. I have before mentioned that when the larvæ were found they were preparing to pupate. They were not eating, and were motionless.

The larva is about five-sixteenths of an inch in length, and

[* De Geer described and figured the earlier stages of this beetle upwards of a hundred years ago (*Mémoires*, v. 405, pl. x., figs. 3-6; 1781), and cf. Westwood's *Introduction*, i. 382.—E. A. F.]

has the usual number of segments—thirteen; the three segments near the head bearing two legs each. Underneath it is of a yellow colour, the upper surface of the segments being black, with the yellow body showing between; they appear to be again divided, but the division ends at the side in a roundish prominence, from which spring two or three hairs. The whole body of the larva is covered with hairs. The cephalic segment is very small, and bears rudimentary antennæ and palpi, composed of three joints each, the apical joint being pointed. The caudal segment is also very much smaller.

After remaining motionless for a time, usually two or three days, the skin begins to split along the upper side of the larva, commencing with the cephalic segments. When this has properly commenced the insect seems restless, and moves upwards and downwards. This movement seems to act upon the skin and splits it farther, until the opening extends the whole length of the insect. This usually took about half an hour, and was done in the early morning. The skin is not entirely drawn or slipped off, but is still fastened to the hinder segments, and serves to hold the pupa very securely to the leaf to which the skin itself adheres. This is a wise provision, as otherwise the helpless pupa might be washed off into the water and drowned. The pupa, which the cast-off skin discloses, is of a golden-yellow colour, but in about five hours turns quite black.

The pupa is quiescent, and the parts of the perfect insect are very plainly seen. The head is applied against the breast, the antennæ lie along the sides of the thorax, the first two pairs of legs are entirely exposed, the other pair being covered by the elytra. After remaining in this quiescent state for seven days, the perfect insect emerged. The pupa-skin commenced to split up along the back, as in the larva, and was drawn off in a similar manner, revealing the beetle or perfect insect. Not until the insect has partly emerged does it make any sign of movement: when the antennæ are fully exposed it begins to move them upwards, slowly and by degrees, until they are in their proper position; then the first and second pairs of legs are used to push off, as it were, the enveloping skin, and the perfect insect is fully emerged. It is then of a golden-yellow colour, the antennæ and legs being of a darker colour, as also the elytra, which do not appear to alter.

When first emerged the insect walked about for a short time, and then generally crawled under the leaves until it had assumed its normal colouring and was fully able to fly, which happened in from two to three hours. At this time the body was quite black, and the legs and antennæ nearly of the same colour. The beetles ate the dead leaves in the box, and were rather lively, seeming to be gregarious, congregating together under the leaves. After keeping them for some time, an unfortunate accident during my absence deprived me of the pleasure of watching their habits further.

The life of an insect, as we have seen in the later metamorphoses of a beetle, is one continued series of changes. These are not merely from the larva to the pupa, and from the pupa to the perfect insect,—during which it acquires new organs,—but consist also of repeated sheddings of the skin, which occur at intervals, before the larva has attained its full size. It was at this period that I found the larvæ described.

The question may naturally be asked, why does the insect undergo these metamorphoses or changes? The answer will come appropriately from the 'Origin of Species,' where the author says:—"The embryonic state of each species reproduces more or less completely the form and structure of its less modified progenitors"; and Herbert Spencer says:—"Each organism exhibits within a short space of time a series of changes, which, when supposed to occupy a period indefinitely great, and to go on in various ways, instead of one way, gives us a tolerably clear conception of organic evolution in general."

The present developmental history of a beetle really represents therefore the modifications which the species has undergone in past time; and as Sir John Lubbock says:—"That the ancestors of beetles, under the influence of varying external conditions and in the lapse of geological ages, should have undergone changes which the individual beetle passes through under our own eyes, and in the space of a few days, is surely no extravagant hypothesis."

It may be asked, whether, in looking over the records of the past history of the earth, we find anything by which the evolution of a beetle from other forms of life can be inferred; and here it must be confessed that Palæontology does not furnish us with any direct evidence with regard to the evolution of beetles. We must remember, however, that the crust of the earth, within

which is written its ancient history, must be looked upon as poorly written, and with whole pages lost; so that we are left to look to Embryology for light upon the subject; and it is generally admitted that the structure of the embryo and its developmental change—either within or without the egg—indicate as truly the course of organic development in ancient times, as the rocks and their sequence teach us the past history of the earth itself.*

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN JUNE.—Yesterday, at Effingham, in company with Mr. S. J. Capper and Mr. H. Vaughan, I saw a specimen of *Colias edusa*, and trust it may be a precursor of another *edusa* season.—T. H. BRIGGS; Surrey House, Leatherhead, June 20.

LYCENA VARIETIES OR HYBRIDS IN KENT.—It may perhaps be of interest to record the capture by my boys and myself, during the present month, of pale varieties or hybrids similar to those taken in June last year. We have secured very perfect examples of both male and female forms; all were taken on the same ground as those last season, but they appeared to be more distributed. As Mr. South's suggestion in the April number of this year's 'Entomologist' (p. 79), that "there may be similar forms in other cabinets," has elicited no response, I can only suppose that the specimens taken by us are peculiar to this spot. Whether they are a distinct species, simple vars. of *L. bellargus*, or hybrids between that species and *icarus*, I am unable to determine, but most probably the latter; and if so, unions between the two species must be a tolerably common event here; but why not elsewhere also? I have never myself met with anything at all like these pale varieties, although I have collected for many years; but they may have been in existence at this spot long prior to last season, which was the first in which I worked for *bellargus* in this particular locality. I shall hope to take notice of the exact time of the first emergence of second brood of *bellargus* and the continuance of *corydon*, and supply you with a further note on this matter. I would only now say that the suggestion made to Mr. South by "entomologists who have had

* Abridged from Trans. Leicester Lit. and Phil. Soc.

much experience" (Entom. 81) has simply astounded me. I do not think I have passed a single season without meeting with *corydon* and *adonis* flying together at one and the same time. Even my boys, mere lads, are conversant with this fact. We have observed this at various places in this county, in Sussex, and at the Isle of Wight. I of course am not prepared to say that the same thing obtains in all localities, but in the counties I have named unions between *corydon* and *bellargus* have been most decidedly possible, and any number of them too.—E. SABINE; 22, The Villas, Erith.

AMPHIDASYD BETULARIA, var. DOUBLEDAYARIA.—Of the few odd specimens of this species that I have bred at one time or the other, the result has always been perfectly black varieties, and have never yet bred the normal form. I should be glad to know if this is generally the case elsewhere in the north —A. E. HALL; Norbury, Pitsmoor, Sheffield.

TEPHROSIA BIUNDULARIA AND T. CREPUSCULARIA.—*T. biundularia* was first noticed by me this year, in a state of nature, in Shooter's Hill Wood on June 6th, when two males occurred. I have occasionally seen them since, up to last night, when I netted two (rather the worse for wear) flying at dusk. One or two collectors who devote all their energy to the larger species must have taken a considerable number, as one collector showed me several in a box on June 15th. Ova of *T. crepuscularia* laid in the last week in April, from Somerset, hatched May 16th. Some began to go down on June 15th and 16th; others which hatched at the same time as these are not more than half-grown. Ova of *T. crepuscularia* laid during the last week in April, from Perth, hatched May 20th. One or two went down June 15th; the others are, with only two exceptions, pretty well full-fed. I am anxiously looking forward to rearing July specimens of this brood, as a second brood never occurs in a state of nature near Perth. My *T. crepuscularia*, even from the north as well as those from the south-west, were nearly full-fed larvæ when *T. biundularia* first began to appear in the south, and whilst *T. biundularia* are still flying *T. crepuscularia* (south and north) are pupating.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E., June 16, 1887.

LOBOPHORA VIRETATA.—I have at length succeeded in obtaining the larva of this local Geometer, a few eggs having been laid

on my setting-boards by captured females, which hatched in about a week. I supplied the young larvæ with flowers of holly and mountain ash, in addition to privet leaves. I found, however, that the two flowers alone were eaten, the holly being decidedly preferred; and when, in about a week, my stock of flowers failed, I substituted the young berries, which are now (June 24th) being greedily devoured by the fast-growing larvæ. The insect occurs abundantly in Sutton Park, where hollies also abound; but the precise connection between the two has not, I believe, been previously ascertained. Possibly some of the Birmingham collectors may be able to find the larva feeding at large on the berries of the holly, and may thus confirm my observation. I hope to describe the larva more at length when full-grown; at present it reminds me, in point of colouring, of that of *Asthena blomeri*. —(REV.) CHAS. F. THORNEWILL; The Soho, Burton-on-Trent.

LEPIDOPTERA OF LULWORTH COVE.—During a short stay at Weymouth, in August last, I availed myself of an opportunity afforded by a steamer to visit Lulworth. The time at my disposal for collecting, I regret to say, consisted of but a few hours, besides which I had not even the opportunity of choosing a favourable day, as these steamers only run to Lulworth on certain days and at stated times. I left Weymouth in the forenoon, and after a short run landed at Lulworth. The weather was anything but desirable, being cloudy, with a cold and rather boisterous wind blowing. I first clambered up the side of the hill in the direction of Weymouth, but, although I went over a great deal of ground, I saw nothing worth taking. On retracing my steps back to the little bay I came upon a gentleman, who had been collecting the greater part of the morning, and had caught some twenty specimens of the local *Hesperia actæon*. This gentleman kindly directed me to the spot where *H. actæon* chiefly resorts, and after some searching I was fortunate enough to obtain a couple of specimens, male and female. They did not rise until nearly stepped upon, and were easily captured. I saw several other collectors, who had come probably for the especial purpose of capturing this species; and I was informed that large numbers of people visited Lulworth annually for the same reason, so that it does not seem improbable that only a few years will elapse before it will become as extinct in Britain as *Polyommatus dispar*; and the discovery

of the larvæ of *H. actæon*, which I believe has occurred comparatively recently, will doubtless add to its decline, as it did in the case of *P. dispar*. The list of other specimens seen and captured during my short stay is very meagre. *Melanargia galatea*.—I only saw and captured some two or three specimens of this insect, although August is one of the months it may be expected to turn up. This species is very variable in colour, my own specimens being considerably lighter in colour than the specimen delineated in Kirby's 'European Butterflies and Moths,' pl. xi., fig. 9. Coleman's 'British Butterflies,' pl. v., No. 3, show a specimen which in shade nearly resembles my own. I saw two specimens only of *Satyrus semele*, but only succeeded in taking one, a fine male. I took only one specimen of *Lycæna corydon*, which I did not expect to find so scarce here, as it apparently was; for, although I cannot find Lulworth mentioned as one of its haunts, it is generally to be found in abundance in chalky districts in the south. This is one of the species with which Mr. South has dealt so ably and exhaustively in these pages. I regret to say that the specimen I obtained at Lulworth is far too battered for any minute comparison with the examples given on Plates I. and II., attached to his valuable paper; but the examples to which it appears to bear most resemblance are as follows:—On the upper surface to fig. 9, Pl. I.; and on the under side to fig. 2. The remaining specimens seen and captured were far too common to need any comment. Exception, however, should be made of *Zygæna filipendule*, which exists here in extraordinary profusion. The day of my visit the ground was strewn with the perfect insect, whilst to nearly every tuft of grass numbers of empty pupa-cases were attached, the moths having nearly all emerged. Doubtless, with a greater amount of time at disposal, some insects which on that occasion seemed scarce would be found to be not uncommon in the locality, whilst many other specimens, not mentioned here, would be added to the list.—W. G. McMURTRIE; South Hill, Radstock, Bath, May 12, 1887.

TAPINOMA MELANOCEPHALUM, *For.*—Whilst walking in the Palm House, Kew Gardens, in September last, my attention was drawn to what at first sight appeared to be a host of small dipterons, travelling with great rapidity up and down the stem of a species of palm (*Howea grisebachia*) from Tropical Australia. After considerable difficulty I succeeded in capturing some few

specimens, when I found they were a species of ant hitherto unrecorded in this country. *Tapinoma melanocephalum* was first described by Forel from Cayenne, then from the Tonga Islands, and latterly from Bahia and St. Thomas. Forel also found it on board of one of the West-Indian mail-steamers. It has also been found in India, Oceania, and Tropical America; but this is its first recorded capture in Europe. This brings the number up to seven species of exotic ants found in Kew Gardens by Messrs. Smith, Saunders, and myself.—T. R. BILLUPS; 20, Swiss Villas, Coplestone Road, Peckham, S.E.

NOTES ON COLEOPTERA.—A cold wind and cloudy sky are not greatly to be desired when one is looking forward to a pleasant day's collecting; and the morning of May 30th was about as cheerless as possibly could be when I started for Waterloo Station to meet Mr. Cripps, whence we proceeded by train to Surbiton, thence walking through the fields to Claygate, Oxshott, and Esher. The foliage generally was wet, and beating out of the question; sweeping and searching being the order of the day. For some little time our net proceeds were comparatively nothing; but as the weather brightened matters improved. The first captures were made at a felled tree,—two nice specimens of the scarce *Hypulus quercinus* located under loose bark. Some vigorous sweeping resulted in a few *Prasocuris aucta*, three *Cnecorhinus exaratus*, two *Tanymericus palliatus*, a stray *Lebia chlorocephala*, one *Grypidius equiseti*, two *Orobitis cyaneus* (a very singular-looking beetle, with legs folded up and rostrum bent over, it bears a strong resemblance to a black seed—I almost discarded it as such): other captures were *Alophus triguttatus*, *Ceuthorhynchus campestris*, *Balaninus glandium*, &c. *Ceuthorhynchideus troglodytes* occurred commonly, but not so profusely as in former years. Larvæ of the lepidopteron, *Ino statice*, were numerous on sorrel; many apparently full-fed, but others still very small. I captured *Anthicus antherinus* in the pathway leading through the covers at Claygate; this was an interesting capture, as, though the insect is plentiful enough at Rainham, Essex, hitherto I had not taken it in the Esher district. During the afternoon Mr. Newbery came over, and we continued our researches on the heathy portions, beating oak, birch, and pine; obtaining therefrom *Caliodes rubicundus*, *C. quercus*, *Rhynchites betulæ*, *Orchestes salicis*, &c. The pits were unproductive, being

infested with sand-martins. At the Black Pond we found *Elaphrus cupreus*, *Anchomenus gracilis*, and *Cyclonotum orbiculare*. Later in the evening, by sweeping a marsh, we obtained *Pæderus littoralis* commonly, two or three *P. caligatus*, *Coccinella 19-punctata*, *Bryaxis sanguinea*, and a few other things. On June 4th, in bright sunny weather, I proceeded alone to same district. After the heavy downpour of June 3rd, progress through the flooded foot-path and drenched fields was rather tedious; but, all things considered, I had tolerably good sport. *Otiorhynchus scabrosus* was soon captured; and, getting to a small patch of hawthorn-blossom, I beat out *Clytus mysticus*, *Polyopsia præusta*, *Rhynchites æquatus*, *R. germanicus*, *Anthonomus pedicularis*, and *A. rubi*; from an old stump I obtained *Rhizophagus ferrugineus* and several Cissidæ. I commenced sweeping, but dragging the net through the soddened herbage proved a heavy task, and I netted a considerable quantity of water and very few beetles; getting on to higher ground I obtained *Cionus scrophulariæ*, two *Tanymecus palliatus*, about twenty *Alophus triguttatus*, a few *Barynotus obscurus*, *Cneorhinus exaratus*, *Hypera punctata*, *H. fuliginosus*, *Prasocuris aucta*, *Anisotoma calcarata*, *Phyllobius calcaratus*, Bruchidæ, *Limonius minutus*, &c. Among Lepidoptera, larvæ of *Ino statices* were still prevalent, and *Porthesia similis* (*auriflua*) very abundant in hawthorn; *Euchloë cardamines* were plentiful during the afternoon; I saw also several *Cilix glaucata* (*spinula*) drying their wings in the hedges; and a few *Emmelesia albulata* flitting about in the evening. I made an excursion on June 11th to Loughton. Saw plenty of *Bembidium 4-guttatum* and *flammulatum*, and captured a few *articulatum*; also took *Phytobius waltoni*. By sweeping *Genista anglica* I got several *Apion genistæ* and *Strophosomus obesus*. The hawthorn-blossom yielded *Rhynchites æquatus*, *pauillus*, *æneovirens*, *germanicus*, *Adimonia sanguinea*, *Anthonomus pedicularis* (plentifully), *Polyopsia præusta*, and one *Clytus mysticus*. On June 18th I went to Rainham, Essex, in scorching hot weather. *Bembidium concinnum* swarmed on the river banks; *Malachius viridis* were common; swept a stray specimen of *M. æneus*, which induced me to search for more of this pretty beetle, and I eventually found sixteen others on *Dactylis* flowers; likewise *Leptura livida*, *Lema melanopa*, *Telephorus lateralis*, *T. litura*, and *Mordellistena pumila*. On June 21st I went to Basingstoke canal. The special purpose of this trip was to obtain

various species of *Donaciæ*. Having selected the most likely places, I prepared for wading operations by taking off boots and socks, and turned up my trousers,—the best way to ensure success if *Donaciæ* are at all obtainable. My captures were as follows:—Seventy-five specimens of *Donacia linearis* and *D. thalassina*, four *D. comari*, two *D. sericea*, eight *D. sagittariæ*, and six *D. hydrochæridis*,—in all one hundred specimens. Other captures were *Lina longicollis*, *Cassida viridis*, *Colymbites tessellatus* (from old tree stumps), *Phyllopertha horticola*, *Gyrinus marinus*, *Luperus betulinus* (very common), *Erirhinus nereis* (profusely), and other small species.—G. A. LEWCOCK; 40, Oxford Road, Islington, N. [I have found *A. antherinus* not uncommonly sometimes in the neighbourhood of Claygate and Esher.—T. R. B.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 1st, 1887.* Dr. David Sharp, F.Z.S., President, in the chair. Mr. Philip Crowley exhibited the following specimens of Diurni, from the Kareen Hills, Burmah:—*Papilio zaleucus*, Hew., *Papilio adamsoni*, Smith, *Papilio* ? sp. (male and female), and *Nymphalis nicholii*, Smith. Mr. T. R. Billups exhibited several specimens of an ant found at Kew, frequenting a species of palm from Tropical Australia, and which had been determined as *Tapinoma melanocephalum*; also living specimens of *Carabus auratus* from the Borough Market, and of a species of *Blaps* from Northern Africa. Mr. Waterhouse exhibited a specimen of a Brazilian Locust, *Conocephalus* ? sp., which he had for some time preserved alive, and which had only died that same morning. He called attention to the change of colour which he had observed in the eyes of this insect; in a bright light they were dirty white or horn-coloured, with a black dot in the middle; but at night, or if the insects were confined in a dark box, they became altogether black; shortly after death, also, the eyes became black. Mr. M'Lachlan observed that he had noticed a darker spot in the centre of the eye in certain Ephemeridæ, and in other Neuroptera. The discussion was continued by Dr. Sharp and others, but no one seemed to be able to account for the alteration in question. Lord Walsingham exhibited specimens of *Cateremna terebrella*, Zk., a species lately taken in

Britain, which he had caught in Norfolk, and bred from fir-cones gathered in the same locality. Mr. Meyrick read two papers, "On Pyralidina from Australia and the South Pacific" and "Descriptions of some exotic Micro-Lepidoptera." In these papers about sixty new species were described. A discussion ensued, in which Dr. Sharp, Mr. Stainton, Mr. McLachlan, and others took part. Mr. Meyrick stated that, as far as the Pyralidina were concerned, Australia could not be regarded as a separate region, for a large number were not endemic, but appeared to have been introduced from the Malay Archipelago. The method of this immigration seemed doubtful. Mr. Meyrick was of opinion that the insects flew very long distances, and effected a settlement through their food-plants being widely distributed and common. He instanced the undoubted immigration of certain Australian species into New Zealand, a distance of 1200 miles. Mr. Stainton adduced the instance of *Margarodes unionalis*, which is a South-European insect, feeding on the olive, yet is occasionally found in Britain. Mr. Meyrick exhibited, in connection with his paper, *Oxychirota paradoxa*, Meyr. (unique specimen representing the family Oxychirotidæ), *Epharpastis dædala*, Meyr., and *Mixophyla erminea*, Moore. Mr. Meyrick also made some observations on the distribution of the insect fauna in the various regions of Australia; he said that it appeared to be more or less different in certain defined portions of the continent, which might be roughly regarded as oases in the midst of desert districts; all his observations, however, had tended to upset Mr. Wallace's theory that Eastern and Western Australia were originally separated, as the gradations in the insect fauna from east to west were quite gradual; in Western Australia the Tineina were the only group well represented by peculiar endemic forms. Mr. Pascoe read a paper "On the genus *Byrsops*," a genus of Curculionidæ. The President announced that Lord Walsingham's collection of Lepidoptera and larvæ, recently presented to the nation, would be exhibited in the Hall at the Natural History Museum, South Kensington, until the end of June.—W. W. F.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. — May 26th, 1887. R. Adkin, Esq., President, in the chair. Mr. Cooper exhibited forms of *Spilosoma menthastri*, Esp., bred from pupæ received from Scotland. Mr. Adkin, bred examples of *Brephos notha*, Hb., *Pachnobia leucographa*, Hb., and

Aleucis pictaria, Curt. Mr. S. Edwards, twenty-nine species of *Papilios*, including the following: *P. ædippus*, Gray, *P. marchandii*, Bois., and *P. cloanthus*, L. Mr. Billups, living specimens of *Carabus auratus*, L., found in the Borough Market, in baskets of radishes from the South of France, and stated that this was the sixth year in succession it had been found in London. Also *Cetonia floricola*, Hbst., from Bordeaux; and species of *Blaps* from the Holy Land. Also the following Hymenoptera: *Cheiropachus quadrum*, Fab., from Hayling Island; *Blennocampa aterima*, Klug., from Chobham; *B. alternipes*, Klug., from Loughton; and *Allantus marginellus*, Pz., from Hayling Island, and contributed notes.

June 9th.—The President in the chair. Mr. West exhibited, on behalf of Mr. Beaumont, three varieties of *Abraxas grossulariata*, L. Mr. S. Edwards, living larvæ of *Orthosia upsilon*, Bork. Mr. Wellman, living larvæ of *Acidalia rusticata*, Fb. Mr. Jager, *Eupithecia albipunctata* (bred). Mr. Turner, a dark variety of *Ematurga atomaria*, L., taken at Loughton. Mr. Mera, bred specimens of *Fidonia lumbaria*, Fb., and *Eupithecia venosata*, Fb. Mr. Adkin, on behalf of Mr. L. Gibb, a larva of *Apatura iris*, L., from the New Forest. Mr. Billups, *Pelophila borealis*, Pk., from Co. Armagh, Ireland, taken by the Rev. W. F. Johnstone; *Lasioderma testaceum*, L., and contributed notes; an immense number of a species of *Apanteles*, and a *Microgaster*, with their cocoons, from larvæ of *Melitea aurinia*; also two species of Diptera of the genus *Phora*; and two species of parasitic Hymenoptera, one a *Chalcid*, and the other a species of *Aspilota* bred from larvæ found mining the leaves of *Aquilegia vulgaris*. — H. W. BARKER, *Hon. Sec.*

ANCIENT ENTOMOLOGICAL LITERATURE.

“One hundred & twenty Copper-Plates of English Moths & Butterflies, representing their Changes into the Caterpillar, Chrysalis & Fly States, & the Plants, Flowers & Fruits whereon they feed. Coloured with great exactness from the Subjects themselves. With a Natural History of the Moths & Butterflies, describing the Method of Managing, Preserving, & Feeding them. By BENJAMIN WILKES. To which is added an Index of the Insects & Plants, adapted to

Linnæus's System. London: Printed for Benjamin White, at Horace's Head, Fleet Street. MDCCLXXIII."

SUCH is the title-page of a strange old book, which has fallen into my hands, though not my possession, a short description of which may perhaps interest some of your readers.

Pasted inside the book is a "Dedication to the Worthy Members of the Aurelian Society," enclosed in a wreath of flowers, and all round the margin of the page are coloured figures of the larger caterpillars, wherein *Atropos* is called "the Bee Tyger." The dedication is well worth quoting:—"Gentlemen,—Permit me the honour of laying before you Twelve new Designs of English Butterflies: creatures whose Elegance and Variety of Beauty demand our admiration. Ignorance long imagined them the Spontaneous Productions of Putrifying Matter and undesigning Chance: Causes as little able to form an Animal as to create a World: but your Discoveries have Rectify'd that mistake and prov'd them to proceed from Parents like themselves: after a constant tho' wonderful Order of Generation. The pregnant female, with unerring Sagacity, deposits her Eggs in some Concealment, where the infant brood may find, as soon as hatch'd, immediate and proper Sustenance. Here they feed and thrive and cast off several skins, till arrived at full growth, every Species in a manner peculiar to itself, is changed into an Aurelia: whence in due time a Moth or Butterfly issues forth, array'd with all the glories of its parent. This too partakes the Joys of Love, lays Eggs and dies: and thus one race succeeds another in an uniform and unalterable manner. The care that has been taken to render these designs exact representations of Nature, may, I hope, recommend them to your favour, and excuse the presumption of, Gentlemen, your most obedient Servant, BENJ. WILKES."

In the Preface, after a passing tribute to the memory of "that well known and ingenious Naturalist Mr. Joseph Dandridge" and his "noble Collection," the author goes on to answer "some ill-natured people, that love to find fault with everything," who have found fault with him for "enriching his Undertaking with some of the most beautiful Productions of Nature in the Vegetable Kingdom"; explaining that, as most caterpillars feed on the oak, elm, blackthorn, whitethorn, willow, and nettle, he has judged it unnecessary to repeat those subjects, and has merely placed a small fragment in the plate, making the main subject one of the

above productions of Nature. I am bound to say that his plates display more truth in the way of food-plants than this led me to expect. Passing thence to nomenclature, he compliments "the Aurelian Society and several other ingenious gentlemen, because they, from time to time, have thought proper to bestow some Name on every Species that has come within their knowledge," modestly adding that, while retaining suitable names already given, he "has presumed to bestow names on such as either had none at all, or which he thought not sufficiently denominative of the particular Flies intended to be known by them," making the names descriptive of "the shape, colour, marking, food, or place where found."

The Introduction mentions, among other things, that "it frequently happens that the Fly does not come out at the usual time, but continues in the Chrysalis state till that time Twelvemonth." That "the Goat Moth is three years proceeding from the egg to the Fly-state." That "the Caterpillars are divided into naked and Cloathed kinds": which principle of classification he follows throughout the work, mixing up Macros and Micros. That "some Caterpillars feed upon the Waters naked and exposed and others make themselves Cases of Sticks, Rushes, &c., in the Waters, where they get their food." He notices "the surprising Quickness and Distinction in the Sense of Smelling in the Males, when in quest of the females—exceeding that of the Blood Hound." Butterflies are distinguished from Moths by their clubbed antennæ, the Burnets being nondescript. The Introduction concludes with a quotation from 'The Universe,' a poem by Mr. Henry Baker, comparing the metamorphoses of the fly to those of the man.

Then follows a list of the months, with the moths that occur, and the localities, among which are "The Banks about Chelsea Water Works and such like places" for the hawk tribe. The first ten days of July are to be devoted to the Purple Emperor in Comb Wood, by Kingstone, in Surrey. And when "the Purple Emperor begins to grow bad, the Time comes on when *the second Breed of the Swallow Tail Butterfly* is quite fresh." Rotherhithe Marshes and the low grounds by Vauxhall are great localities, and in October comes the Admirable Butterfly.

As to methods, the net is of gauze, "like a Bat-fowling net: one Ell long, $\frac{3}{4}$ of a yard wide at the bottom and $\frac{1}{2}$ a yard at the top, sewed to a tape, that it may be fastened to a couple of Hassle

or other Sticks, five feet long each, the upper part whereof should be bent circular to fit your net." Having netted your insect, you kill it by squeezing, "pin it with that side uppermost which is most beautiful; then stick in your box, and look out for more Sport." Setting is done leisurely with card braces, the wing being raised even with the nose of the fly; and small moths and such as stiffen quickly must be set on small boards, while in the fields caterpillars and moths are to be got by beating, and Aurelias by digging.

So much for the earlier part of the work. The classification is entirely by caterpillars, depending on their nakedness, hairiness, protuberances, and tufts; with the result that the Angle Shades, Black Thorn Moth, Small Elephant, and Sword Grass, with several Micros, come all under one heading; the Admirable and several Fritillaries under another; the Blue Argus and Purple Emperor under another; while the generation of the Glory of Kent and the Cleifden Nonpareil is unknown.

The plates are excellent, displaying the insect in several positions, with the larva, pupa, and often the ova.

Two captures of the Willow Butterfly near Camberwell are recorded in August, 1748. *Sphinx convolvuli*, said to feed in the larva state on the bindweed among the corn. *Lasiocampa pini*, taken by the author himself in the larva state once on whitethorn bush near Richmond Park in the middle of September, 1748. The *Noctua delphinii* is beautifully figured in all its stages along with its food-plant, the wild larkspur; and it is said "to have been bred in England by the Honourable Mrs. Walters and by Nathaniel Oldham, Esq., but that it is very rare." The Swallow-tail Butterfly seems to have occurred commonly about Cookham, near Westram, in Kent, and, as above mentioned, to have been double-brooded.

A few of the plates I fail to recognise, but the majority are, for the time of publication, wonderfully accurate; and the flower part, which the author apologises for in the Preface, is admirably executed.

Altogether, the book, with its quaint hints as to methods and implements, reminds one of the old days of walking up your birds with a pointer and shooting a dozen brace on a good day. But I have already said much more about it, drawn on by the charm of its antiquity and the quaintness of its expressions, than I originally intended, and must conclude with the wish that more of your readers could see it for themselves.

G. M. A. HEWETT.

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PROTECTIVE COLORATION.

By G. V. HUDSON.

PROBABLY one of the most interesting subjects in connection with Entomology is the protective colouring of insects. I have read with great pleasure a most exhaustive paper relating to this matter by Mr. Roland Trimen (Entom. xviii. 25), and now propose to offer a few remarks on the same subject in connection with some of our New Zealand species, where, I think, protective colouring is unusually prevalent.

Commencing our observations with Coleoptera, we find a curious beetle (*Enarsus bakewelli*) which, when at rest with its legs, &c., closely packed away, exactly resembles a pellet of mud about the size of an ordinary bean; this is not owing to the adhesion of any particles of earth, &c., on the insect, but is most evident in perfectly clean specimens. Another insect (*Rytinotus squamulosus*) bears an equally close resemblance to a piece of stick; in fact, when I first took this species amongst rotten wood in June, 1883, at Palmerston North, I was doubtful as to its coleopterous nature until I had carefully examined it with a lens, and was quite unable to persuade some friends it was a beetle until I had compelled it to walk about on the table. The rare weevil, *Ectopsis ferrugalis*, is more remarkable in its resemblance to a short stick cut diagonally, the ends of the elytra suddenly sloping down, their colouring at this point resembling that of the section of a small twig. I should imagine this must be a purely accidental circumstance.

Among the Lepidoptera, the curious *Argyrophenga antipodium* mimics the blades of the tussock grass by the silvery stripes on the under surface of its wings, which renders the insect almost invisible when it closes its wings and settles in the grass, which it habitually does when pursued. The large *Charagia virescens*, when perched in the branches of its native tree (*Aristotelia racemosa*), can only be distinguished with difficulty from a leaf. I found a fine male specimen in this situation on October 22nd, 1885, which is the only living specimen I have ever seen or taken in the open (Entom. xviii. 34).

Turning to the Noctuidæ, almost all the colouring is protective; the delicate green mottling of *Hadena vigena* renders it quite invisible on moss-grown trunks, while the markings of *Hadena lignana* and *Agrotis debilis* closely resemble old lichens.

The Geometridæ nearly all imitate dead leaves and the trunks of trees in their colouring, those of the genus *Declana* resembling the lamps of lichen, &c., adhering to them. *Cidaria verriculata* is very curiously coloured, the wings being ornamented with a number of parallel yellow and brownish lines extending right across the insect. They are perfectly straight, and are also continued on the body, and thus form an uninterrupted series. The under surfaces of *Dasyuris perornata* and *D. partiliniata* are ornamented with silver streaks, resembling the grass which they inhabit.

Among the Micro-Lepidoptera protective colouring is equally prevalent, the insects comprised in this division imitating stones, lichens, and the excrement of birds in their markings, some of the resemblances being very exact.

The imitative propensities of the Phasmidæ among the Orthoptera are so well known that it is almost unnecessary to mention them here. So complete indeed is their resemblance to the twigs of plants that I have frequently caught hold of an insect quite unintentionally. The sexual disparities existing in this family are also very curious, the males being only about half the length of their partners and much more attenuated. Their identification is a matter of the greatest uncertainty, as I am confident that their colouring often undergoes a complete alteration owing to their environment, green species being found on young succulent plants, while brown ones are invariably discovered on the trunks of trees, &c., where such colouring is

more protective. Among the larvæ of some Lepidoptera this rule holds good in an increased degree. I will take as examples the two common bush-moths, *Boarmia dejectaria* and *B. panagrata*, both of which I have frequently reared.

The former (*B. dejectaria*), when feeding on the malvæ (*Melicytus ramiflorus*), is light pea-green, exactly resembling the twigs of the plant. When feeding on the white rata (*Metrosideros scandens*) it is dark brown, thus harmonising equally well with the almost black branches of that plant; while those individuals which feed on fuchsia are bright green with reddish markings, thus imitating its young leaf-bearing shoots. Finally, bluish grey larvæ of *B. dejectaria* may be occasionally beaten from the New Zealand nightshade (*Solanum aviculare*), a plant whose branches are of that hue.

In the case of *B. panagrata* we have, firstly, a dull olive-green caterpillar feeding on the kawakawa (*Piper excelsum*). Its colour is perfectly protective, the larva increasing the deception by coiling itself into a semicircle and sitting on the twig, thus appearing exactly like the numerous joints which occur at intervals up the stems of this plant. Secondly, a brownish larva feeding on the "currant" (*A. racemosa*), which adheres closely to the twigs, and during cold days seeks shelter in the burrows of *Charagia virescens*, where large numbers may often be discovered while cutting out the pupæ of that insect. Thirdly, we find a totally different-looking caterpillar feeding on *Myrtus bullata*, which is again the larva of *Boarmia panagrata*, imitating the colour of its food-plant.

It is needless to say that when I first found these larvæ I was confident they belonged to six or eight different insects, and was much astonished to find them result in the two common species above referred to. I must also mention that the perfect insects (*Boarmia dejectaria* and *B. panagrata*) are extremely variable, and I have noticed that the dark varieties of the larva give rise to the dark varieties in the perfect insect, and *vice versâ*; but as I have not reared a very large number of these insects, this result may be due to one of those coincidences which so frequently deceive us in these matters.

I think I have now said enough to show that protective colouring is very prevalent among New Zealand species; but I must also add that the insects themselves are all extremely

secret in their habits. Walking through the bush on a hot summer's day, the entomologist cannot fail to be impressed with the paucity of insect-life around him compared with a similar situation in England, and will very probably exclaim that there are no New Zealand insects worth speaking of. In this, however, he is somewhat mistaken; for although they are unquestionably very much less numerous here than in the old country, yet there are a great many more than anyone would imagine, judging from first impressions only.

Wellington, New Zealand, May 20, 1887.

ON COLLECTIONS OF LEPIDOPTERA.

By WM. BARTLETT CALVERT, F.E.S.

ANSWERING Mr. F. H. Perry Coste's article (Entom. xx. 93) about "Collections of Lepidoptera," my idea is that future students of British Lepidoptera will learn far more of the habits, economy, and ways of living of the different species of British Lepidoptera, by making their own collections, than ever they would had they only access to some type collection.

The science and study of Entomology is not blindly restricted to Entomology alone, but embraces Geography, Topography, Botany, and many of the physical laws of Nature. What could be learnt of the ways and habits of the *Cossidæ* by studying in a museum only? All we would gather by such a study would be the difference of form, colour, size, and variation of certain genera and species in connection with others, or the variation of a certain species taken in different localities; but we should be as ignorant of the modes of life as we still are of the life of pre-historic man. To my idea, all who wish to study profoundly any one part of Entomology must make his own collection, set his own insects, and leave the buying of typical collections to colleges and schools (for elementary teaching in these establishments this would be the only way to procure a collection).

How much may be learnt by setting Lepidoptera? Only those who do a great deal of this kind of work can tell; in setting one is able to study the flexibility of the wing (which could not be done by type-study alone), its debility, hardness, &c., in bringing

up to position on the setting-board, things which could *never* be learnt by museum-study. Another great drawback to typical collections for scientific study is that not always one is able to dispose of a spare hour for study during the hours a museum might be open, whereas had the student a collection of his own it is at his disposal whenever he has a spare moment (his not being restricted to any special hours is a great advantage for true entomological study); also, should he wish to destroy any of his specimens to study the neurulation of any particular group, he is at liberty to do so, for I am sure *no museum* could afford to have their types destroyed, however great might be the desire of the student to do so (even for deep and scientific research). That a typical collection of British Lepidoptera (as also of the other branches of Entomology) should exist in each of the provincial museums I do certainly agree in; that young collectors may there be able to compare their specimens with typical ones, so that, when they have any species which they are doubtful of, there is the type to help them in their difficulty. Again, speaking of Entomology as a business,—Who studies Entomology as a means of earning his daily bread? Not one in a thousand, for all who take any delight in this beautiful study do it, I am sure, from motives of pleasure, and at the same time that it serves as a recreation from daily toil, so that the time *lost* in setting is more than regained by the practical knowledge we acquire of the strength of the tissues of wings of different genera, and which could *never* be learnt by any other means than manipulation while fresh (for even damped specimens have not that flexibility and delicacy of wing to be found in recently-caught specimens).

Mr. F. H. Perry Coste asks, What is the logical *raison d'être* of a collection of Lepidoptera? (1st) To show the fauna of a country or part of a country; (2ndly) to be able to see at a glance the relation one form bears to another; and (3rdly) a student of Entomology needs something to reanimate him now and again from hard study, and nothing is better able to awaken the theoretical part of it than the practical part of forming a collection.

Of what educational value is such a collection? Of the greatest; as I have aforesaid, we cannot always find half an hour spare time to go to the museum during its open hours, nor can we learn much from coloured drawings (as the neurulation is never

well-defined); therefore our only resource is to have our own collections, for better lose time in setting specimens we have ourselves caught than to be running to and from our house to the museum; that would indeed be time lost, and if during the winter we are caught in a nice drenching rain and get a fine cold, then it would not only be *time* lost, but both *health* and *patience* into the bargain.

From an educational and scientific standpoint, is the game worth the candle? It may or it may not be; for, according to whom the collection belongs, so will its worth be. To the working man (many of whom I believe have fine collections, and who do a great deal of *real scientific work*) the collection is only too well worth the candle, for how many of these hard and sturdy workers (at their death) leave their families almost penniless, whereas their collections would always fetch a pretty good sum (especially for a fine local one), enough at any rate to keep things going until "something turned up."

Many more remarks I might bring forth to show the value of individual collections, but I am afraid to tire both the editor's and reader's patience; but I also hope to see this discussion continued, and may they all tend to the same end as this, *i. e.*, to encourage young students to study from their own work.

Colegio Yngles, 13, Nataniel, Santiago de Chile, May 25, 1887.

NOTES ON LEPIDOPTERA OBSERVED IN LONDON.

By PERCY RENDALL, M.D.

DURING the past six or seven years I have taken notes of the appearance of insects which I have seen in London, and though I do not pretend to have much new light to throw on the question of the metropolitan fauna, yet the subject, as far as I am aware, has received so little attention that it seems to me to be worth while, in view of Mr. Sharp's promised list, to mention briefly, with notes of any matter of interest respecting them, the species which I have seen within two miles of the Marble Arch, *i. e.*, in Ladbroke Square; the more so, as I shall, perhaps, be unable hereafter to amplify the list.

DIURNI.

Pieris brassicæ, *P. napi*, and *P. rapæ*. *Colias edusa*, some years ago, probably the last "*Edusa* year." *Vanessa polychloros*, one captured and two seen. *V. urticæ*, common over flower-borders all through the summer. *V. cardui*, occasionally seen in autumn, with *V. atalanta*. *Polyommatus phleas*, scarce.

BOMBYCES.

Smerinthus populi, one at light in a drawing-room (July 1st, 1885), and larvæ on poplar. *Diceranura vinula*, larvæ on poplar. *Arctia lubricipeda*. *Zeuzera pyrina*, noticed years ago, and again this year; larvæ of *Sphinx ligustri*, were occasionally found on privet bushes. *Phalera bucephala*, sometimes found on walls or pavements in the neighbourhood, having dropped or been blown off various trees. *Cossus ligniperda* infested a willow tree, which they killed; then they were noticed in an almond, which became moribund, and was also cut down; the lower part I possessed myself of, but, although I kept it for years and introduced new blood from a colony that was flourishing in a hawthorn tree close at hand, I was only able to hatch out one imago. *Orgyia antiqua* swarms everywhere, and emerges in successive broods over a space of several months; the males I have noticed dancing about in the sunshine all through the summer, and I have captured them by exposing the apterous bred females. I noticed, when breeding them, that the latter always greatly outnumbered the former. I am as cordial a hater, for various reasons, of the useless and mischievous house sparrow as Mons. A. Wailly (Entom. xx. 128) and the would-be growers of spring bulbs, who this year complained in the '*Standard*'; yet I feel bound to admit that, though the sparrows disregard this insect as a larva on account of its hairiness, they devour it largely when in the pupal state.

NOCTUÆ.

Acronycta psi. *A. aceris*, larvæ on sycamore in neighbourhood. *A. megacephala*, frequently found settled on trees; the larvæ freely on poplar, but constantly found crawling on walls, &c., when full-fed. *Mamestra brassicæ*, too common; larvæ very destructive to garden plants. *M. persicariæ*, taken at rest occasionally; larvæ on white jasmine. *Agrotis exclamationis*, imagines disturbed from

box-edgings, &c. *Tryphæna pronuba*, an invariable pest. *Tenio-campa instabilis*, at rest. *Euplexia lucipara*, the larvæ on everything, and completely defoliating all ferns; they were found very easy to breed, and absolutely exempt from all ichneumoniform attacks. *Hadena oleracea*, settled and bred *Xylophasia monoglyphæ*. *Habrostola tripartita*, at dusk. *Plusia gamma*, constantly noticed over flowers in broad sunshine. *Gonoptera libatrix*. *Mania typica*, in profusion at dusk over flowers. *Catocala nupta*, at sugar; never noticed at rest in daytime.

GEOMETRÆ.

Uropteryx sambucaria, seen in plenty from June 28th onwards, larvæ on ivy after hybernation. *Rumia luteolata*, very common. *Eugenia quercinaria*. *Biston hirtaria* were fairly common, though I can answer for the fact that Ladbroke Square is not one of those places where Newman found them, as he says, "twenty or thirty crawling up one tree." I have noticed the imagines from April 14th to May 10th, the females always outnumbering the males in the proportion of ten to one; the males come out first, and are much more lively and handsome in coloration. *Hemerophila abruptaria*, taken at rest in characteristic manner with wings outstretched, and settled out of reach, a habit I have often noticed rather marked in this species. *Boarmia gemmaria*, very common, feeding on bark of jasmine in early spring. *Phorodesma pustulata*, at dusk. *Halìa rauraria*, over flower-beds. *Acidalia virgularia*. *A. aversata*: the banded form, which Newman figures as the variety, has always been found commoner than the type. *Panagra petraria*, at light. *Abraxas grossulariata*, in the greatest abundance, the larvæ feeding by preference on a small kind of ornamental evergreen shrub (*Philorrhæa*?), often stripping it of leaves. *Eupithæcia oblongata*, settled on walls, trees, &c., with *E. vulgata* and *E. absynthiata*. *Camptogramma bilineata*. *Melanippe fluctuata*, larvæ found and reared on nasturtium, &c.

PYRALIDES, &c.

Pyralis farinalis. *Eurrhynpara urticata*. *Ebulea sambucalis*.

The Tortrices seen were unfortunately not specially noted; and as this was the case, though the Micro-Lepidoptera were fairly represented, I refrain from entering into particulars, at present.

The above notes, though without doubt very incomplete, as

regards many of the commoner species (which I fancy might turn up were it possible to make systematic search for them with the aid of the sugaring-tin), contain all the species that I have definite notes, made at the time, of having taken, and for which I can personally answer. For the information of those who are unaware of the position of Ladbroke Square, I may say that it is less than two miles west of the Marble Arch, and is one of the largest of the London "squares," the area being roughly about three acres. It is situated on a heavy clay soil, and slopes from north to south. The nearest open space of any entomological promise is Lord Holland's Park, towards the south-west.

With regard to collecting in London, one fact is particularly before my mind, which is, that I have never found a moth on a street-lamp, though it is difficult to help searching them when one is out after dark.

One is naturally led to wonder what good insects might have been taken, in times past, in a locality where, even in the last few years, I have seen blackbirds', thrushes' and hedgesparrows' nests, with eggs, and where in the early morning rooks and starlings may still be seen feeding. The chaffinch and robin are constantly heard singing during the summer months, and to my knowledge nest in the neighbourhood. I have seen spotted flycatchers feeding a family of four, who were sitting on a bough waiting their turn whilst the parents hawked for insects; they also must presumably have been bred in the immediate vicinity. Flocks of blue tits can be noticed occasionally searching the acacias, and instances of this kind might be multiplied.

Let me add to this the evidence of one of the assistant gardeners, who has often told me with great gusto how, twenty years ago, his work used to be "not to run over the lawns with a mowing machine, but to cut down the thistles and docks, which, bless your soul, Sir, were as high as my waist."

With the advance of "sootilisation" we have various destructive influences at work, such as the death of all the oak trees, killed by the London smoke and fog, the constant digging of the ground, and the total destruction of all weeds, that form such an important article in the dietary of many moths in the larval stage. The comparative immunity which moths enjoy from the attacks of birds is more than counterbalanced by the myriads of gas-lamps luring them to destruction, and the total absence of all "cover"

in the shape of long grass, brambles, or undergrowth. The limes, which might do something for them, seldom flower, and all trees within a month after coming into leaf become coated with a mixture of dust and soot, that appears to form a most effectual barrier against everything but a very rapacious appetite. The complete absence of any "London form of melanism" (such as has been attributed to the manufacturing districts, where the black *Amphidasys betularia* has been taken) has always seemed to me the most effectual evidence that there can be here no influence brought to bear by food or surroundings. Except for the interest attaching to the acquisition of exact details concerning the species that still remain near us, I found that collecting in London was waste of time; yet on the capture of such things as *Vanessa polychloros*, *Smerinthus populi*, *Phorodesma pustulata*, and *Hemerophila abruptaria*, one is naturally led to speculate what rarities might have been taken on the same ground before that relentless octopus called civilisation spread its arms of bricks and mortar, over the forests and fields of Middlesex.

16, Little Grosvenor Street, W., May 20, 1887.

COLLECTING AUTUMNAL LEPIDOPTERA.

BY JOHN T. CARRINGTON, F.L.S.

AMONG the autumnal Lepidoptera counted rare is *Cirrhædia xerampelina*; an easy species to take when we know how. How many gas-lamps have I clambered under the impression that every yellowish moth was the prize, of those days, to find only some other less valuable capture. Even when found at light they are usually singed, and seldom in good condition. How different was the appearance of these handsome moths when I found out how to get them—larger and finer than bred. Walking one afternoon, about the second or last week in August, by the side of Knavesmire, near York, I noticed a spot of yellow on one of a row of ash trees. That spot of colour was the first of a long series of *C. xerampelina*. If I remember rightly, I took that afternoon between seventy and eighty specimens, just as they emerged from pupæ. The way to get them is to search the

trunks of detached ash trees in fields or parks a couple of hours before and up to dusk, when they may be found drying their wings. The grass for six or eight feet round the trees should not be neglected, for often a stray moth will be found. I never had a second opportunity of working those trees, but I have found these moths in other localities in the same manner, though perhaps in less numbers. In the park at the back of Douglas, Isle of Man, the dark variety *unicolor* occurs. I never found many, perhaps one in a dozen, amongst the typical forms. *C. xerampelina* is a generally distributed species, and any detached ash trees should be searched; those growing in hedgerows are hardly worth the trouble, as the moths get away among the grass and twigs, and are difficult to find.

In fir woods the trunks of *Pinus sylvestris* may be examined in the same manner as just described, for imagines of *Thera firmata*, which comes out much after the manner of *C. xerampelina*, but when drying hangs with the wings over the back much longer than the latter species. The second brood may be sought for towards the end of August. I do not think enough attention has been given to the examination of tree trunks late in the afternoon; many other species might be found in this way.

When the feathery trusses of flowers of reeds (*Phragmites communis*) burst into bloom, a grand feast is set forth for hungry moths. Sometimes half a dozen may be found on a single spike of flowers by the aid of a lantern. These vary in rarity according to locality, and I have often wished I could work this style of collecting in the fenlands, where possibly some good things might turn up. How is our rare *Xylina lambda (zinckenii)* taken on the Continent? It has only been found in this country, so far as I remember, in the spring, after hybernation. Where the reeds have been cut, examine the short standing stems if a series is wanted of *Nonagria lutosa*. Among autumn flowers is ragwort, but everyone knows all about the various species to be taken thereon at night.

For those who have never worked the blossom of the heather (*Calluna*) by lamp-light, there is a treat in store. Given, a tolerably still night, especially if the flowers have not become general, but early patches are dotted about, and the exhibition of living Lepidoptera is enough to make the most cynical or misanthropic moth-catcher thaw into benevolence, for how can he take

all that he sees? The genera *Noctua* and *Agrotis*, especially, are represented; *N. glareosa* and *N. castanea* in the one, and *A. agathina* in the other. Where it occurs, *Celæna haworthii* frequents this bloom; but we need not expect that moth if no cotton-grass occurs thereby.

Several Geometers affect heather-bloom, such as the handsome *Triphosa dubitata*, in all the freshness of recent emergence. In all, I know no more interesting collecting than this: associated with balmy weather of early autumn, brilliant colours of pink flowers and green leaves, intensified by the concentrated lamp-light, an occasional patch of grey lichen or brightly-coloured fungus for change; a stillness of night that is almost oppressive, broken only perhaps by another ardent lepidopterist, more assiduous than yourself, who is heard diligently making his way through the little paths between the bunches of heather, with sundry grunts and snuffles loud enough to attract attention long before he reaches your range of light. Turn on your lantern to welcome him, and silence again reigns. You soon find the culprit with little bright black eyes and a half-eaten *Noctua neglecta*, the richest red variety you have seen, still held fluttering in his teeth. Touch him, and he coils round, the fattest hedgehog you would wish to meet. Many have I seen, especially in Scotland; and experience has taught that it is little use following them, for hardly a moth is missed by them.

Where hemp-agrimony grows, the flowers are well worthy of examination both by day and by night, as are also those of the devil's-bit scabious, which by day are most attractive to Diurni, especially Vanessidæ; *Vanessa c-album* is very fond of these flowers. On chalky soil in the south, more especially in the daytime, a series of *Eremobia ochroleuca* may be taken early in August, on the flowers of the other scabious (*arvensis*).

Curiously, autumnal moths seem more susceptible to the attractions of light than their spring brethren. Gas lamps should be carefully examined and a fixed light placed in convenient places. Some nights, as is so well known, are much more suitable than others. There are some nights when anything may be expected. I remember one especially good night, a few years ago, near Gravesend, when I saw at the lamps that evening almost every division of the Lepidoptera, the butterflies being represented by a lively specimen of *Vanessa atalanta* and

one *V. cardui*, sufficiently dissipated-looking to suggest that it was not its first night's wandering.

Nothing need be said about autumnal sugaring or collecting at ivy-bloom, both being so well understood and popular; but has daylight sugaring been tried? For the *Vanessidæ*, to those who want them or other daylight insects, sugaring flowers in rides of woods will be found well worthy of trial. If *V. antiopa* gets within scent of that sugar, it is likely it may become a prisoner.

Autumn is the time to fill up one's blanks among the members of the genus *Peronia*. These moths have a habit of sitting during the afternoon for an hour or two before flight, in September and October, in warm, sunny situations. I have taken good series of both *P. lipsiana* and *P. maccana* off the upper sides of bracken leaves in Scotland, where they were also to be found upon the leaves of bilberry, when bracken was absent. *Peronia rufana* occurred on the leaves of the sweet gale and dwarf sallow on the moors; *P. mixtana* on the heather; *P. schalleriana* and *P. comparana* in the woods on any leaves; *P. comariana* and its varieties occur on strawberry leaves in gardens; *P. variegana* on roses, sallows, and hawthorn; *P. hastana* on sallows, especially the dwarf varieties near the sea-side on sand-hills. *Peronia cristana* is, of course, more local, but not so much so as *P. permutana*, which frequents the beds of dwarf roses on the sand-hills near Wallasey, Cheshire. They are best smoked out, by which means I have taken a hundred specimens in a single afternoon.

Smoking out Lepidoptera in autumn is very profitable, if properly conducted, but highly dangerous if any carelessness occurs. I have tried all the plans recommended in books and otherwise, but found none so easy or effective as by the commonest fuzees. Those with stems wrapped with wire were best. If a gentle wind blows, hold one of these fuzees down close to the ground before striking it, when the smoke will get well into the herbage and bring out everything, spiders included. Many a good bag have I made by this means, but great care must be taken to see that each fuzee is quite extinguished before lighting another, or we may have more smoke than we care about. A dozen boxes will do a good afternoon's work. The herbage should not be too stunted, nor too much of one character, for a mixture of food-plants is suggestive of a variety of species

of insects. Micro-lepidopterists will find this mode of collecting very remunerative.

We may now turn our attention to the collection of autumnal larvæ. A good selection of collecting-ground is half the cause of success in this work. Of course it depends much upon what is wanted. A pleasant day may be spent upon sand-hills, where there is an abundant growth of bedstraw (*Galium verum*), in hunting for larvæ of *Deilephila galii*. It may be none are found, but if the reverse happens its beauty and rarity will compensate the finder for many failures. I have found it twice—once on the sand-hills north of Shoreburyness, in Essex, and once on those at Wallasey, near Liverpool. Although so large an animal it is not by any means easy to find, the protective coloration of the skin being so beautifully complete. Look, not for the larvæ at all, but for the little pellets of frass; when once found they should be traced forward by their freshness, until a little track of foot-marks is seen in the sand, which also followed brings us to our capture. A heathy place studded with small birch, oak and other trees, just outside a large wood, is a likely place to take autumnal larvæ by beating, which, by the way, need not be the laborious work I have seen some men make of it, to the detriment of the trees and the annoyance of the proprietors. I have said elsewhere, I think, in these pages, but I venture to repeat, that night-work is much more productive than beating by daylight. Then is it that the larvæ are feeding more loosely, and drop into the inverted umbrella at the least tap of the beating-stick. It will be found that two collectors can do this kind of collecting much more successfully than one by himself. One holds the light and boxes the larvæ, while the other beats until he is tired, and then turn "turn about."

Probably some of my friends will, on reading these notes, consider them very elementary, and so they are; but I make no apology, for there are among our readers some to whom they may be useful. We have always a large leaven of young beginners, who require but a hint to stimulate them to good work, and to them these remarks are addressed.

Westminster, S.W., July 25, 1887.

NOTES ON LYCÆNIDÆ IN NORTH KENT.

BY J. W. TUTT, F.E.S.

MR. SABINE'S communication on "*Lycæna* varieties or hybrids in Kent" (Entom. 181) is interesting, so far as he seems to have found the pale "*icarus*-coloured" varieties widely distributed, though the fact has been known to the Rochester collectors for a long time. The "butterfly-catchers" who collect for "sport" used to take (1871—75) a large number of these forms, with the type, everywhere on the chalk-hills between Rochester and Maidstone, on both banks of the Medway.

Mr. Sabine states that Mr. South's suggestion (Entom. 79) elicited no response, and supposes that the specimens taken by him "are peculiar to this spot." I should like to know what spot. Mr. Sabine, whilst taking to himself the whole value of a discovery, and apparently asking for information, takes great care to keep his locality a secret.

The form occurs in all places with the type, as I previously noticed, between Rochester and Maidstone, and through North Kent almost to Gravesend. I should not be surprised if Mr. Sabine's locality is a corner of this greater area. My specimens of this form came from Cuxton and Bluebell Hill, near Rochester. I have paid but little attention to the butterflies during the last five or six years, but have no doubt that it still occurs. I know that a Rochester collector took some in August, 1885, on Bluebell Hill.

I cannot suppose that it is a distinct species. As a lad (between the years 1871 and 1875), when I captured several, there was never the slightest doubt in my mind other than that it was a peculiar form of *Lycæna bellargus*. In some butterfly-book I then possessed I remember reading an extract to the effect that lilac-coloured *bellargus* were captured by one of our older entomologists, and the cause was put down, I believe, to a thunderstorm or some other atmospheric effect occurring. Perhaps some of the readers of the 'Entomologist' can point out the extract. The under side distinguishes it at a glance. It is perfectly typical.

The hybrid theory I consider is too far-fetched, although both Messrs. South and Sabine in opinion incline to it. Will

either of these gentlemen point out in nature anything at all compatible with Mr. South's suggestion? I yield to no one in my admiration of the theory of evolution, but this seems really to be carrying it too far. I can understand a particular form becoming so modified by its environment, as ultimately to produce a distinct species; but to suppose that distinct species like *icarus* and *bellargus* copulate freely together in nature, and that their offspring fly only with the species of one parent (in this case *bellargus*), seems more than improbable. Had Mr. South suggested atavism, or a recurrence to the primitive type of the group, the primitive type being probably *icarus*, I should have agreed with him; but to suppose that a species, once developed as such, naturally intermixes freely with another has, I venture to say, no parallel in nature. Mr. Sabine, after stating that he believes them to be hybrids, knocks his own theory on the head with the pertinent question, "but why not elsewhere also?"

I think the suggestion that the variety "may have been in existence at this spot prior to last season" amusing. Does Mr. Sabine think that permanent local varieties, which are well distributed, grow in some miraculous manner in one season?

My own opinion about the matter I have briefly stated. Nothing that I know of in the localities seems to indicate why some *bellargus* should be typical in colour whilst others are not. We might, if wholesale hybridisation occurred, apply the principle to all our "blues," and Mr. South has well pointed out how variable in shade are *icarus* and *corydon*, as well as *bellargus*. *Icarus* males are sometimes nearly as bright as typical *bellargus*, sometimes purple-coloured. *Corydon* looks sometimes nearly white; in others the species has such a dark band that the blue shade looks very different. In *bellargus* we have three shades: (1) the bright brilliant blue, (2) a more purple-coloured but still *adonis*-blue, and (3) the lilac-coloured, called by Mr. Sabine the pale variety.

Mr. Sabine mentions another matter, the continuance of *Lycæna corydon*, and second emergence of *L. bellargus*, and brings the testimony of two lads to bear out his point, to the discomfiture of Mr. South and the "entomologists of much experience." Mr. Sabine's boys have been butterfly-catching now, as I believe, for seven years, a very good apprenticeship at

a few of our small number of native *Diurni*; but for all that Mr. Sabine is misleading. With a cold June *corydon* is late out, and, if followed by a hot July, *bellargus* is out early. Then the late specimens of *corydon* might just be captured with the early specimens of *bellargus*. It occurs now and again, but most entomologists know very well it is not normal. For example, this year *bellargus* was out on June 22nd; *corydon* will be out in a week, fully by the 1st of August, and *passé* long before the 15th or 20th of the month. Will *bellargus* be out then? From my experience and notes I think the chances are greatly against any being out; a few, however, may be. It is never out fully till the 24th to 28th of August. Strangely enough, my experience has been obtained chiefly in Kent, Sussex, and the Isle of Wight. If Mr. Sabine were to make written notes for a few years the comparison might be useful; but, although Mr. Sabine is "astounded," Mr. South and the "entomologists of much experience" are right, and Mr. Sabine is wrong, in concluding that these species normally fly together.

Blackheath, S.E., July, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ABUNDANCE OF DIURNI IN THE MIDLANDS.—On June 25th I met with *Leucophasia sinapis* in abundance in North Worcester-shire, and, notwithstanding the lateness of the season, they appeared to be in very fair condition. A friend also reports the occurrence of this insect from Stourbridge. *Euchloë cardamines* has appeared in great abundance over the whole of North Warwickshire during the present summer. On July 11th I visited a locality in South Shropshire, and met with *Argynnis adippe* in the utmost profusion. I have never seen the like before; I might have captured hundreds had I desired to do so. For several years past *Vanessa urticae* has been comparatively scarce throughout the midlands, but this year will, I think, prove an exception, judging from what I have seen so far. At Tintern, Monmouthshire, in June last, I found many broods of this insect. On June 21st, among many other insects, I took *Lycæna minima*, *L. astrarche*, and a pair of *C. porcellus* at Cheddar, North Somersetshire.—HARCOURT BATH; Ladywood, Birmingham.

ZYGÆNA MINOS IN WALES.—A few weeks since I received several specimens of *Z. minos*, taken by a friend at the village of Abersoch, on the north-west coast of Wales, on the 8th of June last. As I have not heard of the previous occurrence of this insect in England or Wales, I have thought it worth recording, and shall be glad to hear if any of your correspondents have taken it. My friend informs me that there were some hundreds of the insect on one small plot of ground, but, not being a collector himself, he only secured a few specimens, more for the sake of information concerning the species than for any other purpose.—L. L. SAMUELS; Victoria Park, Manchester, July 12.

CIRRHÆDIA XERAMPELINA IN NORTH WARWICKSHIRE.—Mr. Stanley P. Jones's note (Entom. xix. 253), relating to the occurrence of this insect near Welshpool, reminds me that I captured a specimen of the same species at rest on an ash tree in a lane between Coleshill and Maxstoke Abbey, in August of last year. I believe this is the first recorded occurrence of *Cirrhaedia xerampelina* in the Tame Valley district. There are undoubtedly many other good insects awaiting discovery in North Warwickshire, which have been overlooked by our older lepidopterists. — W. HARCOURT BATH; Birmingham, November, 1886.

DIANTHÆCIA LARVÆ CANNIBALS.—Last year Mr. Carrington kindly gave us a short article on breeding *Eupitheciæ*, and amongst other things stated what good results might be produced from gathering the flower-heads of *Silene inflata*. Last season, having obtained a quantity of the flower-heads of both *Silene inflata* and *S. nutans*, thinking to preserve them from getting too dry I turned the lot into a large biscuit tin; the result being that the flower-heads soon went mouldy from the confined damp, and a fine batch of miscellaneous larvæ were all killed. This year, after collecting the flower-heads, I shot them, just as they were, into a linen pillow-slip, putting a few fresh heads in every ten days or so as the others dried up. So far the result is eminently satisfactory, as I have obtained a good many pupæ already, both of *Eupitheciæ* and *Dianthæciæ* (probably chiefly *D. capsicola*), and should have had more, but for the real object of this communication, which is to warn anyone trying this plan to keep a good look out about the time the larvæ are turning and to remove the pupæ, otherwise if the *Silene* gets dry

the *Dianthœciæ* larvæ, of which there are certain to be several, will inevitably devour the freshly-turned pupæ in preference to their proper pabulum.—T. W. HALL; New Inn, London, W.C., July, 1887.

AMPHIDASYS BETULARIA.—Apropos of Mr. Hall's enquiry (Entom. 182) respecting *A. betularia*, although not exactly to Mr. A. E. Hall's point, yet it may be of interest to hear that the type still occurs in this district, as my brother captured a perfectly normal insect of this species on the night of June 14th by gaslight.—C. E. STOTT; Lostock, Bolton, July 18, 1887.

BUPALUS PINIARIA IN LONDON.—On the 8th inst. I found on one of the windows of the Imperial Bank in Lothbury, in the City of London, a female *B. piniaria*, a curious place for such an insect.—F. G. WHITTLE; 2, Cambridge Terrace, Lupus Street, S.W., July 7, 1887.

LOBOPHORA VIRETATA. — In reply to the Rev. Chas. F. Thornehill (Entom. 182), allow me to inform the readers of the 'Entomologist' that the fact of holly being the pabulum of *Lobophora viretata* in Sutton Park was known to several members of the Birmingham Naturalists' Field Club some years ago, and I daresay he will find a note of it in some magazine if he will refer back.—W. HARCOURT BATH; Ladywood, Birmingham.

NOTES ON LARVÆ OF PLATYPTILIA GONODACTYLA.—I obtained a large number of the larvæ of this species feeding in *Tussilago farfara* (coltsfoot) about three weeks ago. The larva, which has in its earlier stages a very curious Tortrix-like form, wriggles up and down the peduncle or flower-stalk. I have watched the larva very closely, and have come to the decided conclusion that it does not feed either *on* or *in* the seed-heads, but that it feeds on the soft cellular tissue inside the peduncle. During its very early stage it lives inside the flower-stalk, never coming out; but as it gets larger it finds its way up into the hollow receptacle which forms the base of the capitulum. When this gets too small it gnaws a little hole through the receptacle, and constructs a little home for itself made up of the achenes, with the attached pappus spun together with silk, directly above the hole. The larva, living in this, descends when feeding through the hole, and gradually clears out all the cellular tissue below; but that it does not feed on the achenes I feel convinced. No doubt the

peculiar domicile it constructs has led to the probably erroneous opinion that the larva feeds there. An infested flower-head can easily be recognised by the peculiar bunch forming this house standing isolated on the stalk, whilst the surrounding achenes have been blown away. It is a mistake, too, to think that the infested heads generally hang over; a few do so, undoubtedly. This, I think, is due to the larva, when feeding inside, clearing out too much of the cellular tissue on one side, and eating through to the epidermal tissue, which contracts, and hence pulls down the capitulum; but in nine cases out of ten the infested heads are more upright than the uninfested ones. I may add that the larvæ seem to choose few but the strongest heads. I have already bred imagines from larvæ found on May 13th, the pupal stage only lasting from May 21st to June 5th. I should like to know whether any entomologist has ever observed the larva actually eating the achenes or pappus.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E., June 6, 1887.

EPHESTIA KÜHNIELLA IN LONDON.—At the meeting of the South London Entomological Society, June 9th, Mr. T. D. A. Cockerell exhibited a number of larvæ feeding in flour, which were obtained from a cargo lying, I believe, in the London Docks, the cargo being partly spoiled by the larvæ. He kindly gave me a number of them, and during the month (July) imagines have been coming out, the species being, as was suggested at the meeting, *Ephestia kühniella*. That they would soon establish themselves and become a great pest can readily be believed. I have now very small larvæ, pupæ, and imagines, and should think that they were *consecutively* brooded, the ova hatching soon after being laid, the larvæ feeding up and changing to pupæ all the year round. The larvæ want great care to keep them limited to a small space. I placed those I have in an apparently tight-fitting tin canister, but some of the larvæ managed to crawl out of the small spaces where the lid did not quite touch the sides of the box. This migratory propensity does not seem to occur until the larvæ are full-fed, when they leave their food to spin a small silken cocoon. The confined larvæ, I find, mix up particles of flour in the cocoon, but they want some loose substance to spin up in, as otherwise they seem to die off after having formed their cocoon. From an economic point of view this species is a very undesirable addition to our fauna.—J. W. TUTT.

CECOPHORA UNITELLA.—I have bred seventeen of these insects from dull sooty-coloured larvæ, found at Easter under the bark of old elm posts used in the construction of a rough fence by the side of the road leading from Walthamstow to Chingford. I brought home a few pieces of the bark about five inches long, which I laid on some fine earth in a pan, put a glass ring over it, and covered the top with gauze. They took readily to their new habitation, and I saw nothing more of the larvæ, every one of which, I believe, produced a moth, proving it to be an insect easy to rear.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., July 19, 1887.

LEPIDOPTERA AT DEAL.—The recent hot weather has put matters quite straight, and insects are just now appearing quite to date. A journey to Deal, from Friday to Monday last (July 1st to 4th), resulted in a nice lot of *Acidalia ochrata* (many just emerged, with their wings not fully expanded), a fine series of *Xylophasia sublustis*, *Agrotis corticea*, *Homæosoma sinuella*, *Anerastia lotella*, *Gelechia pictella*, and the usual sand-hill species, *Lithosia pygmaeola*, being apparently well out. I am pleased to add *Mamestra albicolon* to the local fauna of the district. *Neura reticulata* (*sapponariæ*) also occurred. I do not know whether this has been recorded from the district previously. I found *Leucania littoralis* flying over the marram grass. The *Gelechias* that I wrote about in the early part of the year are just beginning to appear again, and remain a puzzle yet, although Messrs. Stainton, C. G. Barrett and others have given me every possible help. Probably we shall be able to clear up the matter this year. Insects (*Micros* particularly) were so abundant each evening, from about seven o'clock until dusk, that I was sometimes puzzled what to take first.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E.

AGRION PULCHELLUM.—In communicating the following note my sole desire is to obtain information whether there are several varieties of this pretty little species of dragonfly, or whether I am confusing what are in reality more than one species together, so that I must ask indulgence for any mistake on a subject of which I know so little. (A.) By far the prettiest, to my thinking, and certainly by far the commonest, is the male of the following description:—Body turquoise-blue, banded with black; head likewise turquoise-blue and black; this type far outnumber all other

varieties put together, and is one with which I have been familiar all my life. (B.) Body black, banded with turquoise-blue; head likewise turquoise-blue and black; this is not a type with which I am familiar; female; single specimen taken by me in Wanstead Park in the afternoon of June 28th. (C.) Body dusky, banded with creamy rings; head likewise dusky; female; I have observed this type all my life. (D.) Body dusky, banded with creamy rings, like the female, with the exception of the last segment, which is turquoise-blue and black; head turquoise-blue and black; male?; I have noticed this type during more than one season; whether variety or distinct species, it is constant. (E.) Body dark grey, with the exception of the last segment, which is turquoise-blue and black; head also dark; eyes of dark coral-red, not turquoise-blue, as in the case of the other types; male presumably; two specimens from Wanstead Park. Type A, extremely common; C and D, fair number; B and E, rare.—F. A. WALKER; Dun Mallard, Cricklewood, N.W., June 28, 1887.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *July 6th, 1887.* Dr. D. Sharp, F.Z.S., President, in the chair. The Rev. W. T. H. Newman, M.A., 11, Park Terrace, The Crescent, Oxford, was elected a Fellow of the Society. Mr. M'Lachlan remarked that at the meeting of the Society in October, 1886, he exhibited a quantity of the so-called "jumping seeds" from Mexico, containing larvæ of *Carpocapsa saltitans*, Westw. The seeds had long ceased to "jump," which proved that the larvæ were either dead, had become quiescent, or had pupated; about a fortnight ago he opened one of the seeds, and found therein a living pupa. On the 4th inst. a moth (exhibited) was produced. The President, on behalf of the Rev. H. S. Gorham, exhibited the following Coleoptera, lately taken in the New Forest:—*Anoplodera sexguttata*, Fab., wholly black variety; *Grammoptera analis*, Fab.; *Colydium elongatum*, Fab.; and a specimen of *Tachinus elongatus*, Gyll., with brownish-red elytra. Mr. S. Stevens exhibited a specimen of *Orsodacna humeralis*, Latr. (*lineola*, Panz., var.), taken by him at Norwood: he also exhibited a specimen of the same beetle taken by him fifty years ago in Coombe Wood; during the

interval he had never seen it alive. Mr. G. T. Porritt exhibited, on behalf of Mr. N. F. Dobrée, of Beverley, a series of about thirty specimens of a *Teniocampa* he had received from Hampshire, which had previously been referred to as a red form of *T. gracilis*. Mr. Dobrée was inclined to think that they were not that species, but *T. stabilis*. Mr. A. C. Horner exhibited the following species of Coleoptera from the neighbourhood of Tonbridge:—*Compsophilus palpalis*, Esp. (5); *Acrognathus mandibularis*, Gyll. (4); *Homalota atrata*, Mann., *H. vilis*, Er., and *H. difficilis*, Bris.; *Calodera rubens*, Er.; and *Oxytelus fulvipes*, Er. He also exhibited a *Rhizophagus* from Sherwood Forest, which appeared to belong to a new species; and several specimens of *Holopedina polypori*, Först., also from Sherwood Forest, where he had found it in company with, and probably parasitic on, *Cis vestitus*. Mr. Elisha exhibited two larvæ of *Zelleria hepariella*, Stn. Mr. Stainton remarked that as the greater part of the larvæ of *Zelleria* were attached to the Oleaceæ, it seemed strange that certain species had recently been found on Saxifrage. Mr. Slater read a paper "On the presence of Tannin in certain Insects, and its influence on their colours." He mentioned the facts that tannin was certainly present in the tissues of the leaf-, wood-, and bark-eating species, but not in the tissues of the carnivorous beetles, and that black-colour on the elytra of certain beetles appeared to be produced by the action of iron on tannin. A discussion ensued, in which Prof. Meldola, Mr. Poulton, Dr. Sharp, and others took part.—W. W. FOWLER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—June 23rd, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Mr. Wellman exhibited bred examples of *Lobophora viretata*, from Burton-on-Trent. Mr. Oldham, a number of species from Epping Forest, including *Drepana lacertinaria*, *D. falcataria*, *Notodonta dromedarius*, *Eurymene dolobraria*, and three specimens of *Chærocampa porcellus*, taken respectively at Theydon, Lords Bushes, and Loughton. Mr. Jager, *Erastria venustula*, from Horsham; bred examples of *Eupithecia isogrammaria*, *E. tenuiata*, and *E. venosata*, the last-mentioned having been two years in pupa. Mr. W. A. Pearce, *E. isogrammaria* and *E. castigata*. Mr. Sheldon, bred examples of *Sesia culiciformis*. Dr. Rendall, *Heliaca tenebrata*, taken at Hounslow. Mr. Turner, living larvæ of *Cucullia*

verbasci. Mr. West, of Greenwich, larvæ and cases of *Coleophora palliatella* and *C. currucipennella*, the former found on oak at West Wickham and the latter on oak, sallow, and aspen. There were also a number of other interesting exhibits, among which were eggs of the Night-jar (*Caprimulgus europæus*), from Leith Hill, Surrey.

July 14th. — The President in the chair. Dr. Rendall exhibited *Acidalia rubiginata*, *A. marginepunctata*, *Eupithecia coronata*, *E. plumbeolata*, *Lithostege griseata*, *Agrophila trabealis*, *Spilodes verticalis*, &c., all taken at Thetford. Mr. E. Joy, *Erastria venustula*, from Epping Forest. Mr. Wellman, *Dicranura furcula* and *Eupithecia togata*, from Perth. Mr. Jager, *Dicranura bifida*, &c. Mr. J. T. Williams, *Heliothis dipsacea*, *Hydrelia uncula*, &c., from Suffolk. Mr. Tugwell, four varieties of the larvæ of *Cucullia chamomillæ* ranging from white to pink, *Sesia sphegiformis*, and three specimens of *Dicranura bicuspis*, and two pupa-cases, one on the bark and the other on a twig of birch. Mr. Hall, *Spilosoma mendica* bred from ova. Mr. R. Adkin, *Notodonta trepida* (bred). Mr. Edwards, a variety of *Abraxas grossulariata*, the usual white ground-colour being powdered over, giving it a deep gray appearance, the orange markings in the superior wings being very distinct. Mr. Baron also exhibited a variety of *A. grossulariata*. Mr. South, some interesting forms of *Lycæna icarus* from the Isle of Wight, and called attention to a male with black spots on the hind wings, which he had only seen before in specimens from Sligo, Ireland. Mr. Billups, *Xylocopa violacea* and *X. latipes*; also *Taiscolia hæmorrhoidalis*, and read notes on his exhibit. Mr. Jenner Weir exhibited specimens of *Pieris oleracea*, from Hudson's Bay, and *P. napi*, and contributed some interesting remarks. Mr. Williams mentioned an instance of a species of wasp that had been observed to bring caterpillars into a room and put them in the opening of a reel of cotton fixed on a sewing-machine, the wasp afterwards closing the aperture. Mr. Billups observed that it was a well-known habit of the wasps to store caterpillars in openings which they closed up with mortar. Mr. Billups called attention to the fact, that in the neighbourhood of Essex Marshes the cabbages were utterly destroyed by the larvæ of *Pieris brassicæ*, which this season was very abundant.—H. W. BARKER, *Hon. Sec.*

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ON A NEW SPECIES OF *DIAPERIS* FROM JAPAN.

BY GEORGE LEWIS, F.L.S.

IN June, 1873, Mr. F. Bates described a species of *Diaperis* from Japan in the Ent. Mo. Mag., x. 14, and as at present I possess but one other species from these islands, I feel justified in describing it here because it may be a long time before the Japanese Heteromera, as a whole, will be worked out. At this time I possess over one hundred nondescript species.

Diaperis maculipennis, Marseul, cannot be left in *Diaperis*; it must become the type of a new genus, for which I suggest the the name of *Derispia*. There are three species of it (which I shall shortly fully characterise) from Japan, and I have taken ten other species in Ceylon. I believe representatives of the genus are extremely numerous in Tropical Asia. Some are concolorous or nearly so, but the greater number are yellow with black markings.

DIAPERIS NIPONENSIS.

Oblonga, nigra nitida; thorace lateralibus subcanaliculato, stria marginali elevata. L. $9\frac{1}{2}$ — $10\frac{1}{2}$ mill.

Very similar to *D. boleti*, Linn.; head rugose and transversely depressed between the anterior portions of the eyes. Immediately behind the antennæ the margins are elevated, and between the antennæ is a medial raised part which is not sufficiently prominent to be called a tubercle. Thorax sparsely puncticulate, with the lateral edges narrowly raised, the margins within are dilated and somewhat canaliculate. Each elytron has two transverse bands

and an apical spot reddish yellow. Basal band has four posterior denticulations at the 3, 5, 7, 9 interstices; posterior band has before and behind obtuse denticulations, which correspond roughly to the teeth of the anterior band. The apical spot is trigonal, with notches in the edge farthest from the apex of the elytron. The suture is black to the extent of the first interstice, and the elytral striæ and punctures do not present any specific characters, but resemble those in *boleti*, Linn., and *lewisi*, Bates. The prosternum is rather broad, without the definite lateral margination of *lewisi*, and it has a small medial tubercle at the anterior edge, which is evidently a continuation or culminating point of the anterior margin. In *lewisi* the space between the eyes is half the width of that in *niponensis*, and, roughly speaking, the same may be said of the prosternum. In *niponensis* the antennæ are broader, especially the apical joints.

The species is comparatively rare; I took it at Sapporo and Junsai in Yezo, and at Fukushima on the main island; but I obtained only twenty specimens altogether.

Since the date of Mr. Bates's paper *Diaperis lewisi* has been found in Siberia, and has been taken in all the Japanese Islands. The original specimens came from Fungi on some old posts on the bund at Nagasaki, and on the 30th June, 1880, I saw it in profusion at Shiba in Tokio under similar conditions.

Wimbledon, August 2, 1887.

ON A NEW SPECIES OF *PHELLOPSIS* FOUND IN JAPAN AND SIBERIA.

BY GEORGE LEWIS, F.L.S.

SEVERAL species of *Nosoderma* have been described lately by Mr. Champion, and he has pointed out to me that in *Nosoderma* the last two joints of the antenna are connate, but in *Phellopsis* the last three joints are free and somewhat lax. This seems a sufficient character for a generic distinction, although in the Munich Catalogue the species are all included in *Nosoderma*. Most of the species of *Nosoderma* have been found in Mexico and Central America, while those of *Phellopsis* are two from the United States, and the present species from the western side of the Pacific.

PHELLOPSIS SUBEREA.

Elongata, parallela, opaca, squamosa; thorace postice constricto; elytris posticis 6-tuberculatis. L. 19-21 mill.

Head: broadly and roughly marginate in front, the margin being divided into three parts by an elevation on each side over the basal joint of the antennæ; the central area is occupied more or less with small black tubercles, or little boss-like elevations. Thorax: has two rather acuminate tubercles over the neck, and the medial portion behind the tubercles has irregular ridges and depressions; the sides anteriorly are rather elevated and distinctly dilated, with the angles a little produced and obtuse; from the middle of the lateral ridge the thorax is posteriorly narrowed, and the basal line is the width of the bases of the elytra, on which it encroaches somewhat, especially before the region of the scutellum. Scutellum is small. Elytra: on each side of the suture before the tubercles are two rows of large ill-defined elongate punctures, with somewhat raised interstices; between the tubercles and the apex of the elytron the suture is margined with a row of black tubercles, which resemble those on the thorax. Before the apex of each elytron are two well-defined tubercles, which are transversely placed and touch each other at their base. The innermost tubercle is connected with the base of the elytron by an elevated ridge (often more defined in some specimens than in others), and parallel to this ridge is a shorter ridge, which is abbreviated before and behind. Between the two tubercles described and the apex of the elytron is a third conspicuous tubercle. The whole of the upper surface of the body is more or less clothed with small brownish scales (elongate under the microscope), many of which are lost by abrasion during the active life of the insect. The antennæ are moniliform, the 9th and 10th joints being slightly compressed and trigonate, and the 11th, as stated above, free. In general form and sculpture this species very much resembles others, especially *Phellopsis obcordata*, Leconte, and *Nosoderma venustum*, Champion, and some allowance must be made in reading this description, as the superficial structure varies a little in different individuals.

This species is perhaps diurnal in the early summer, as I first found it actively crawling on old trees which had been split by electricity at Chiuzenji, lat. $36\frac{1}{2}^{\circ}$, on the 10th June, 1880; but in

the warmer latitude of 32°, where summer commences much earlier, eight or nine specimens were found at Yuyama, 11th May, 1881, resting in the crevices of the bark on a prostrate oak, and in this position, owing to their subereous form and colour, they were very difficult to see; so much so, indeed, that although the specimens were clustered together they were only detected one by one at intervals. A keen native collector and myself were bending over the trunk in the eager excitement of capturing a curious and somewhat rare species, yet we failed to see them at once, although our fingers each time a specimen was taken must have almost touched its fellow left behind. In the position described, which may or may not be a usual one, the insects so closely resembled their environment that they were a perfect example of the phase of Natural History which is commonly called mimicry. I also obtained it at Sapporo, about lat. 42°, in August; and Mr. Pascoe has one from Siberia.

Wimbledon, August 10, 1887.

LYCÆNIDÆ IN NORTH KENT.

By RICHARD SOUTH, F.E.S.

IN his critical notice of my remarks on Mr. Sabine's varieties, Mr. Tutt appears to have failed, either in grasping the point of my observations or in making himself acquainted with what I actually wrote. One way or the other he has fallen into error. For instance, he says (Entom. 207), "The hybrid theory I consider is too far-fetched." Now if Mr. Tutt had read the whole paragraph wherein the word "hybrid" occurs, he would have found that I not only wrote "hybrid or, perhaps more correctly, mongrel offspring of a union between *icarus* and *bellargus*," but that I inclined to the mongrel view, and not to hybridism. To have entertained the latter, I must have admitted *icarus* and *bellargus* to be pure species, which I do not admit.

Lycæna icarus, *Polyommatus phlæas*, and *Thecla rubi* are probably all descended from a common ancestor; but I should not suppose a fertile crossing between *icarus* and either of the other species probable, or yet between *P. phlæas* and *T. rubi*. If any such intercourse did occur and there were issue, these would be hybrids. In the case of *L. icarus* and *L. bellargus* we have two

insects which, although they may be species, are not pure species in the sense that *L. icarus*, *P. phlæas*, and *T. rubi* compared one with the other are pure species. *Icarus* and *bellargus* exhibit superficial points of difference; but who shall say that during the process of slight external modifications which each has undergone, functional change in the internal conditions has also taken place to the extent of rendering fertile union impossible between these two insects. I can see nothing improbable in supposing that a female of either of the species may occasionally accept the amorous attentions of an importunate male of the other species.

This brings me to the second count in the charge I have against Mr. Tutt. He makes it appear that I have suggested that "*icarus* and *bellargus* copulate freely together in nature," whereas I consider such a thing quite accidental, as will be seen by referring to the words used, "chance crossing" (Entom. 81). If any remark of mine had warranted Mr. Tutt's inference, he would have been quite justified in characterising it as "more than improbable." As it is, he has placed upon my words a construction of his own, and to this I naturally take exception.

With regard to atavism, I may point out that I distinctly stated that I supposed the blue-black form among Mr. Sabine's varieties to be an instance of reversion to certain long-lost characters. Mr. Tutt appears to ignore this form altogether.

Mr. Tutt can hardly be serious when he asks me "to point out in nature anything at all compatible with (my) suggestion." Any other instance of a similar character would be open to the same objection as the one under discussion, and would be equally improbable to Mr. Tutt. In nature we lack the most important and convincing evidence—knowledge of actual parentage. In forming conclusions, therefore, we have to fall back on analogy, and we find many instances in the results obtained by experiments with animals in domestication or confinement which afford a clue, as it were, to the probable origin of such anomalous varieties as those of Mr. Sabine's.

Anyone who is interested in the subject of hybridism, will do well to carefully study Chapter IX. of Darwin's 'Origin of Species.'

LYCÆNIDÆ IN NORTH KENT.

BY E. SABINE.

PERMIT me to offer a few remarks in reference to some of the statements in Mr. Tutt's note (Entom. 207). I have nowhere stated that I found my pale *Lycæna* varieties "widely" distributed. I said "more" distributed; implying that whereas all the 1886 examples were taken within the space of a couple of acres (Entom. xix. 176), those captured this spring were found over a larger but by no means extensive area.

Whether they are identical with *icarus*-coloured *bellargus* Mr. Tutt mentioned I of course cannot say, not having seen such; nor do I think he has had sight of mine (otherwise he would surely have had something to say about them at the only time I have exhibited them), but mine differ on the upper surface quite as much from any *bellargus* I have ever seen as they do from *icarus*; on the underside (which in all the specimens presents a sort of washed-out appearance) the males have the markings of the former, but the females are most like specimens of the latter.

I still adhere to the hybrid theory, and if this be the correct one, it is simply absurd for Mr. Tutt to say that these varieties "fly only with the species of one parent (in this case *bellargus*"). Is he not aware that *icarus* occurs freely with both broods of *bellargus*? Indeed, last June we found one quite as numerous as the other.

As to the contemporaneity of *corydon* and *bellargus*, I should never have entered upon the subject at all (believing my experiences to be common property amongst entomologists) had it not been for the grave doubts cast on my statement, that I had taken these two species *in copulâ*, by gentlemen "of much experience."

My argument is simply this: that early specimens of the second brood of *bellargus* are to be found amongst the *corydon* in August, and late individuals of the latter occur when the former is abundant in September. Without neglecting Lepidoptera generally, I have yet devoted much time for years past to the Diurni, and profitably too, I think; and have been out and about every year, the whole season long, accompanied by one or other

of my boys, and we have naturally made not a few observations. I give those for the past seven years—it is not necessary to go back farther than this.

Visited my “particular spot” regularly in August each year, and always met with *bellargus* in more or less abundance from about the middle of that month; but this year, owing no doubt to the very exceptionally hot summer we have had, the first individual of the second brood of *bellargus* was netted on the very early date of August 8th. I need hardly say *corydon* is now out.

In the Septembers of the years 1881—5, inclusive, while sojourning at Folkestone and Dover, we never once failed to see *corydon* in few or more numbers flying with *bellargus*, in one instance so late as the 21st of the month.

Last September, on the 4th, and again on the 7th, dozens of *corydon* were still flying among the *bellargus*, the males mostly worn, but some of the females quite fresh in appearance.

I do not propose to write further on this matter, and would only suggest that observation alone will clear up the point. Theory, supported by no matter what argument, is of little use; and I feel sure that any one, having the time and caring to take the necessary trouble, will find that, in places where both species occur in profusion, *corydon* and *bellargus* are to be found flying together at some period or other of their career. Mr. Tutt is strongly against me, but I observe that he has “paid but little attention to the butterflies during the last five or six years!”

A word now as to his data. He writes, “For example, this year *bellargus* was out on June 22nd.” Really! I observe that in a previous communication he says of *bellargus*, “I did not see a specimen.” This was at Cuxton, and I presume he meant to imply that *bellargus* was not fully out there, or it may be elsewhere, until the 22nd of June. Now, if Mr. Tutt aspires to be an authority on the matter, I would recommend him to go further afield for his information. Had he been with us on June 6th (instead of at Cuxton), he would have found *bellargus* plentiful enough.* On the 21st of that month we noticed that it was much reduced in numbers, and that three-fourths of those still flying were worn.

In conclusion, I decline any further controversy whatever with Mr. Tutt on this subject, and most certainly it is not

* A few seen at Ventnor, June 4th, 1887.—R. S.

my intention to enlighten him as to the precise situation of my "particular spot," however much he would "like to know." I see no necessity for so doing, especially as, according to his account, these varieties are so well known and so "widely distributed."

The Villas, Erith, August 12, 1887.

NOTES FROM SHOEBOURNESS.

BY W. G. SHELDON.

ON the 24th of July I was in the neighbourhood of the above village, and having a few hours to spare I elected to spend them in working for Lepidoptera on the sand-hills and salt-marshes stretching along the coast to the north-east of that place; the same as mentioned by Mr. Carrington in his instructive article on salt-marsh collecting (Entom. 45).

The day was unfortunately not the most favourable for coast collecting, a strong wind blowing all the time; however, it was from the south-west, but still the smaller species especially did not seem to like flying in it.

On the sand-hills insects were common, but nothing of rarity turned up, *Lithosia complana* being perhaps the best; *Cledeobia angustalis* was of frequent occurrence, as also were *Crambus perlellus* and *C. warringtonellus*. I cannot but think that this latter insect is nothing more than a melanic variety of the former. They generally occur in the same locality and at the same time, and intermediate forms are frequent; in fact my series of each of these species is graduated, and it is difficult to form an opinion where one ends and the other begins. The flowers of the marram grass at dusk were covered with the usual sand-hill Noctuæ—*Agrotis tritici*, *A. nigricans*, and *A. ralligera*, with a sprinkling of *Caradrina blanda*, *C. alsines*, &c.

On the salt-marshes one or two species occurred in great abundance: most noticeable were *Catoptria candidulana* amongst the fragrant *Artemisia maritima*; *Euprocilia affinitana* and *E. rectisana* generally. A few worn specimens of *Eupithecia subnotata* were disturbed from *Chenopodium*; also one *Crambus salinellus*. A few *Agdistes bennetii* were flying at dusk, but they

were in too dilapidated a condition to be worth taking. Traces of the larvæ of *Bombyx castrensis* were apparent on *Artemisia*, and no doubt earlier in the season they had been common. I did not see any sign of *Geometra smaragdaria*.

Mr. Carrington raises the interesting question, "What becomes of the Lepidoptera when the salt-marshes are covered with the tide?" Something I observed may possibly throw some light on this problem. I had found a particular spot on the marsh where the two Eupœciliæ were common: it was a sort of bank sloping towards a pool left by the tide; the wind was blowing briskly from the bank to the pool, and as I disturbed the insects it carried them over it; presently I observed one on the surface, and stooping to pick it up was much surprised to find it rise off the water with perfect ease and fly away. I soon observed others in the same position, and presently saw several settle and (after remaining apparently immersed for some time) fly away. I then found that insects of the orders Hemiptera and Diptera had the same power as the Lepidoptera, and that they floated on the water and rose from it without difficulty. It seems, therefore, possible that insects frequenting these marshes have acquired a kind of floating apparatus which enables them to rest securely on the face of the waters whilst their haunts are covered by the tide.

Rose Cottage, Oval Road, Addiscombe, August 13, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

DIURNI IN HAMPSHIRE.—On the 25th July I saw three fine specimens of *Vanessa polychloros* near Newport, Isle of Wight; but, having no net, was unable to secure them. Three days later I returned and caught in the same place three specimens, probably those I had seen. I paid one visit to the New Forest, near Lyndhurst, and took five *Limenitis sibylla*, numbers of *Lycæna ægon*, and many *Hesperia comma*. This was on the 2nd August.—HARRY C. SANDFORD; Royal Military Academy, Woolwich, August 3, 1887.

DIURNI ABUNDANT AT DEAL.—Many species of Diurni seem to be abnormally abundant in this district this year. The double-brooded species seem to be exceptionally so. The

following notes, referring only to the immediate district around Deal (unless otherwise mentioned), may be of interest. The second broods of *Pieris rapæ* and *P. brassicæ* are occurring here in the utmost profusion; they are to be met with in immense quantities everywhere, and it is amusing to watch the numbers congregate around the smallest puddle of water, where one by any accident has been formed. The second brood of *P. napi* is very abundant by the sides of the ditches all over the district; I found very dilapidated specimens of the early brood on July 3rd, and a fine large specimen of the second brood on July 23rd. This would seem to be a "white" year here, if the "whites" were not more than outnumbered by certain "blues." I have never noticed them so large or so numerous before. *Lycæna icarus* is beyond doubt the insect of the season, as far as this district is concerned. The second brood is occurring on the sand-hills here in incredible numbers; they are literally in thousands, and on one small clump of marram, about three yards square, within a dozen yards of the sea, I counted above 200 specimens, and this was only one of an endless number of such clumps. This is the more remarkable as the early brood seemed more scarce than usual. It is also abundant on the Downs, and at Kingsdown it is occurring in large numbers. In the town it may be seen, wherever there is an attempt to form a garden, in company with *P. phlæas*, attacking the "whites" in the most pugnacious manner. *L. astrarche* occurs on the sand-hills with *L. icarus* in almost equal abundance. The second brood was beginning to appear on July 24th, and it now abounds not only on the sand-hills, but also on the undercliff between Kingsdown and St. Margaret's Bay. This species and *icarus* are also occurring in unusually large numbers around Folkestone. I noticed scarcely any specimens of the spring brood. I saw wasted specimens of the first brood of *Lycæna minima* on July 11th near the South Foreland. The second brood put in an appearance on August 5th at Kingsdown, and is now occurring in larger numbers than one generally sees this partially double-brooded species in the autumn. A specimen of the second brood of *L. argiolus* was seen in the Dover Road, Folkestone, on August 8th; others had been seen the previous week. *Vanessa urticæ* is as abundant as usual. *V. atalanta* not yet out; larvæ and pupæ fairly abundant. The second brood of *Pararge*

megæra is following the general rule of the double-brooded species this season, being everywhere abundant. *Polyommatus phleas* occurs everywhere here with *L. icarus* and *L. astrarche*; very abundant, although not in such profusion as the two other *Lycenidæ*; it occurs frequently in the gardens and streets. *Melanargia galatæa* in greater abundance this year, both at Kingsdown and on the Dover cliffs, than it has been for many years; still out in good condition, some females apparently emerged yesterday (August 9th). I have not seen a specimen of *Vanessa (Cynthia) cardui* here this year; for the last five years it has literally swarmed about the town, and on the cliffs at Kingsdown; I cannot find larvæ. A wave of immigrants of this species this year has undoubtedly *not* reached our shores. Of *Colias edusa* and *C. hyalæ* not a specimen; I was told that one of the former was seen at Folkestone on Friday last. *Argynnis aglaia* seems unusually scarce this year; I have only seen two specimens all the summer. *Lycæna corydon* fairly abundant on the cliffs around the South Foreland, but not in such numbers as I have previously seen it; only two specimens were seen at Kingsdown, where a few years ago the species was abundant. Most of the double-brooded moths are out, and in some numbers. *Melanippe galiata* was flying freely last evening, and many were worn. *Zonosoma punctaria*, *Timandra amataria*, and *Acidalia ornata* were taken on the cliffs at Kingsdown yesterday. *Acidalia rusticata* was, as usual, there. Is the natural food-plant of this species known yet? I feel certain it is *Parietaria officinalis* (wall pellitory), although I cannot prove it to be so.—J. W. TUTT; 3, Park Street, Deal, August 10, 1887.

ABUNDANCE OF PIERIDÆ IN SOMERSETSHIRE. — This season has as yet brought forth (as far as I am aware) few specimens new to the locality, but two or three species at all times notably common have turned up in unusually great numbers this year, viz., *Pieris rapæ*, *P. brassicæ*, *Vanessa urticæ*. *Pieris rapæ* and *P. brassicæ* have been frequently known to cross the sea in large numbers and disperse inland, and, although I have heard of no such migration, their profusion lately in this district might easily be accounted for in this way. How can we account for the abundance of *Vanessa urticæ*, of which there are no such records? May not the unusual heat have something to do with their large numbers? They would increase incredibly in ordinary years

were it not for the ravages of ichneumons. On experimenting with these flies I found that if exposed to any unusual heat from the sun they speedily died. If this be the case in nature (which I see no reason to doubt), and as we have had an unusually hot summer, it is probable large numbers would die off, and consequently a larger percentage of larvæ would escape unstung, and the butterflies emerge from their chrysalids. It is to be hoped, however, the ichneumons will do their work doubly well next year, or the cabbage plants, on which the Pieridæ feed, will stand a poor chance of arriving to any perfection.—W. G. McMURTRIE; South Hill, Radstock, July 29, 1887.

NOTE ON ARGYNNIS PAPHIA.—One morning, at the beginning of August, I saw a specimen, apparently in good condition, of *Argynnis paphia*, flying about the pier at Worthing. Is not this rather an unusual situation for this wood-frequenting insect?—JOSEPH ANDERSON, Jun.; Chichester.

VANESSA ANTIOPA.—I have read with interest the notes which have been published from time to time in the 'Entomologist' on the colour of the outer borders of the wings of this butterfly, and thought that a few words on the subject from this side of the ocean might be of interest. I have been perfectly familiar with this insect for more than forty-five years, for during that time it has been on the average one of the most common, if not *the* most common butterfly in the localities where I have lived. For the last sixteen years I have had classes in Entomology, and naturally my attention has been directed, year after year, to this very common butterfly, in all its stages, by the different students under my tuition. There is but one generation in a year, and the butterflies hibernate during the winter, in the imago stage. They appear on the wing in the warm spring months, and the females deposit their eggs in May, sometimes to the number of 125, in a belt around the twigs of elm or willow. The eggs hatch, the larvæ pass their transformations, and the butterflies emerge during the latter part of July. These summer insects, fresh from pupæ, *always* have yellow borders, while those which have lived over the winter *always* have the whitish or faded borders, and I have never seen nor heard of an exception to this. They vary considerably in size, but I have never seen any very great variation in coloration except that referred to on the borders

of the wings, which is simply a case of fading with age and exposure. If, therefore, in this country those with the yellow borders are always fresh from the pupæ, and those with faded or white borders are always old or hybernated specimens, is not the same thing true in England and also on the Continent? — C. H. FERNALD; Amherst, Mass., U.S.A., August, 1887.

LYCÆNA ASTRARCHIE AT NEWBURY.—I have taken several specimens of this butterfly near here this season. I report this as Newman says it does not occur in lists transmitted from Berkshire. It is the first time I have taken it in this county.—(Miss) M. KIMBER; Cope Hall, near Newbury.

LYCÆNA CORYDON NEAR HOUNSLOW.—On August 1st I was surprised to take, at the place above mentioned, a fine male specimen of this insect at privet bloom, in company with *Polyommatus phlæas* and *Lycæna icarus*. The insect was observed "toying" with one of the common blues, and before it was netted attention was drawn to it on account of its larger size and lighter colouring. I was unaware the *L. corydon* was taken except on the chalk, and have since had the advantage of consulting with Mr. South on the subject, and he tells me that that is also his experience in collecting that blue. I was sufficiently interested in my capture to investigate the geological formation of that neighbourhood; with this object I visited the Royal School of Mines, and studied the soils of Middlesex and the surrounding counties, with the following result:—On the north, there are two tongue-like processes coming from Bucks, in the neighbourhood of Chalfont St. Peter and Rickmansworth. On the west, there is none to be found nearer than Windsor; and even there, though there is a subsoil of chalk, it nowhere appears on the surface, save in the neighbourhood of the castle. On the south, Banstead Downs is the nearest spot where that particular soil prevails. All three are equidistant, for all practical purposes, from the town in question. The brilliant colouring and perfect state of the cilia render it highly improbable that it could have compassed so long a flight as would have been necessary had it migrated. I have, however, purposely gone into detail on the subject, as I deemed it possible that anyone, not having seen the specimen in question, might have suggested that theory for its appearance on a gravel soil.—PERCY RENDALL; 16, Little Grosvenor Street, W.

LYCÆNA CORYDON AT BECKENHAM.—On August 6th I took a male specimen of the above in our garden. Is it often taken so near London?—A. M. REID; The Avenue, Beckenham.

SPHINX CONVULVULI IN ESSEX.—I think it may be of interest to know that I took a fine male *Sphinx convulvuli* here over a bed of petunias last night (8th inst.), and saw, a day or two ago, *Macroglossa stellatarum* in the same place. I may add that we are only seven miles out of London.—A. E. TONGE; Limefield, Ilford Park, Essex, August 9, 1887.

SPHINX CONVULVULI AT WINDSOR.—On Monday, August 22nd, in the early part of the morning, I captured a male *Sphinx convulvuli*. Half an hour later a boy brought me a fine female, which he had caught in his cap not twenty yards distant from where I obtained the male. Both specimens were on the wing. Is not this very early?—ALBERTO EDMONDS; 3, Park Street, Windsor, Aug. 20, 1887.

SPHINX CONVULVULI IN FRANCE.—Whilst staying in Etretat, a small village on the Normandy coast, I have been enabled, in conjunction with my brother, to take twenty-five of these magnificent insects. On the 18th inst. I was in the garden about eight o'clock, when I chanced to look across to a large bed of petunias, which seemed almost alive with them. I netted on that night seven specimens only, but on the next night I was able to take eighteen: they were all, with one exception, quite fresh and very good specimens. Is not this a wonderfully large take?—NIEL H. REID; Beckenham, Kent.

CALLIMORPHA HERA AT EXETER.—I write to mention the occurrence of this rare moth in this neighbourhood. Its capture near Starcross on the other side of the Exe, about eight miles from this as the crow flies, has been recorded in your columns during the two preceding seasons; but when I went out to try my fortune yesterday I had no expectation of meeting with anything so rare. The specimen I took was perfect, but slightly faded in the rich colour of the under wings, at least as compared with those I have noticed abroad. Its size, however, is fully up to that of Swiss specimens. There seems to be a very interesting entomological fauna in this part of South Devon, judging from a local collection I have had the pleasure of examining; and I hope to send a notice of the insects worthy of record, which I have met

with hereabouts, at an early date.—W. F. DE V. KANE ; Winslade, Exeter, August 16, 1887.

PUPATION OF COSSUS.—Whilst some lawn-tennis was going on here a short time ago one of the party actually saw the perfect insect of *Cossus ligniperda* emerge from the ground within the Court. I doubted it for a moment, as I believed the larva always made up its pupa-case in the wood ; but on going to the spot I saw the pupa-case and the moth in a perfect condition.—W. O. HAMMOND ; St. Alban's Court, August 22, 1887.

DIANTHÆCIA CAPSOPHILA FEEDING ON CARNATIONS.—I was rather startled yesterday evening by the information that a lady resident in this locality desired my opinion as to the destruction of all her beautiful carnations and pinks by a nocturnal marauder that devoured the buds just as they were about to burst into bloom, a circumstance that had not previously occurred during a residence of some years at the seaside. I confess that, with my very elementary knowledge of the larval stage of insect-life, I felt much as the king of Israel is recorded to have felt when the Syrian general came to be cleansed of his leprosy ; I cast about in my mind as to how I could avoid hazarding an opinion until I could consult Mr. Kane or some other eminent entomological friend ; but what was my astonishment and joy to observe, upon inspecting the carnation-buds sent, a nearly full-fed larva of *D. capsophila* looking at me from a round hole which he had pierced in the top of the bud. As an old friend, so I recognised him at once. Your readers are doubtless aware that *D. capsophila* is found abundantly upon this coast, the imago flying at dusk over the flowers, and the larvæ feeding at night upon the capsules of *Silene maritima*, which is usually quite a common plant upon the shores of Howth. This year, from the abnormal heat of the weather, the plant has become rare ; hardly a flower of it is to be seen, and therefore it seems to me most strange, and yet most natural, to find this larva adopting what lawyers would call the “cy-pres” doctrine, and seeking to sustain life by feeding upon another member of the botanical order of Caryophyllaceæ. The two plants are most unlike to the casual human observer.—S. R. FETHERSTONHAUGH ; Rokeby, Howth, Co. Dublin, July 30, 1887. [Larvæ of *Dianthæcia capsicola* are not uncommon in seed-capsules of sweet-williams and pinks in London gardens.—R. S.]

AMPHIDASYS BETULARIA.—With reference to Mr. Hall's enquiry (Entom. 182), I may say that every specimen of this moth which I have bred has been of the black variety; but three years ago I took a single specimen of the normal form, which is the only one I have met with.—R. H. THOMPSON; 50, Parsonage Road, Withington, Manchester, July 30, 1887.

STRENIA CLATHRATA AT SLOUGH.—I took a specimen of this insect on June 9th, and again another, quite fresh, on July 31st; a hot and dry summer produces two broods of some species. I should like to know if this has ever been known of *S. clathrata*, or are there successive emergences of this insect under certain atmospherical conditions?—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough.

FOOD OF LOBOPHORA VIRETATA.—I should be sorry to question Mr. Harcourt Bath's statement (Entom. 211) that the fact of *L. viretata* feeding on the berries of the holly "was known to several members of the Birmingham Naturalists' Club some years ago." But, if so, they have been very cautious about imparting information to others. I made the enquiry (Entom. xix. 181) what was the connection between this insect and the holly? and to that enquiry the only answer given was by Mr. Harcourt Bath himself, on page 255 of the same volume, where he says, "This insect feeds on holly," but gives no evidence, either from his own observation or from any other source, to prove his statement. It happens also that, when your August number reached me, I was in the company of Mr. G. Blatch, a well-known Birmingham entomologist, and he distinctly assured me that neither he nor Dr. Warwick Jordan—whom I believe Mr. Harcourt Bath would acknowledge to be an authority on such matters—had any previous knowledge of the fact stated by me in your columns this year. I think therefore that it is only fair to ask Mr. Harcourt Bath for the names of (say) two members of the Birmingham Naturalists' Club who "knew" that holly was the food-plant of *L. viretata*; or, if he objects to give them, the name of the magazine (referred to by Mr. Bath as "some magazine") in which the record of their observations is to be found. I do not care in the least whether I or some previous observer can claim the credit of the discovery, but I do think that in a publication like the 'Entomologist' we ought to have

ascertained facts whenever possible, and not mere surmises, however great may be the authority on which they are put forward.—CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, August 13, 1887.

GEOMETERS TWO YEARS IN PUPA. — I have this month had *Cidaria sagittata* and *Eupithecia venosata* emerge from pupæ obtained in the autumn of 1885. The bulk of the broods of both species appeared twelve months ago, June, 1886.—J. W. TUTT; June, 1887.

TINEOLA BISELLIELLA, LONGEVITY OF LARVA OF. — One thousand, one hundred and sixty-six days seems to me an unusual length of time for a larva of a clothes-moth to be feeding. One which hatched July 3rd, 1884 (ova laid about 25th June, 1884), was on June 15th last about three-sixteenths of an inch long, and was spinning a web. Not thinking it full-fed I did not again examine it until July 28th last, when I was surprised to find the moth had emerged, and which flew away upon opening the test-tube in which the larva had been confined since it hatched, and fed upon a portion of a parrot's wing-feather until February 24th last, when I supplied it with a few sparrow's feathers.—F. W. FROHAWK; Balham, S.W., August 15, 1887.

LARVA OF HARPIPTERYX SCABRELLA.—I met with the larva of this pretty species rather commonly this year among the hawthorns in Epping Forest about the middle of June. Like all the *Cerostoma* larvæ that I am acquainted with they are excessively active, and require a close-fitting cage to keep them from escaping. They so closely resemble the larva of *H. horridella* as to be separated with difficulty; but that of the latter feeds on blackthorn, and is perhaps a shade paler. They appear to suffer little from ichneumons, and are comparatively easy to rear.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., August 19, 1887.

SIREX JUVENCUS NEAR MANCHESTER.—A fine female of this large sawfly was captured in Didsbury, near Manchester, two days ago. It was seen to fly into a room of a house through the open window and settle on the blind. The window was then closed and the insect boxed out of curiosity. It was handed to me alive this morning, and is a remarkably fine specimen. I have not heard of this species being taken in this district before,

and shall be glad to hear if any of your readers have taken it in this part of the country.—JAMES GÜNTHER; Oldham, August 18.

LEPIDOPTERA, &c., ROUND LONDON.—In Dr. Rendall's paper (Entom. 198) I see he draws attention to a subject which has interested me for some time past, *viz.*, the disappearance of insects once common in the vicinity of the metropolis. Entomologists whose memory carries them back thirty years cannot fail to be struck with the present paucity of many species that once occurred abundantly round London; take, for instance, the best parts of Epping Forest, say Loughton and High Beech, and the contrast between thirty years ago and now will be at once apparent. When I first visited that locality, in 1858 or 1859, every bramble bush in bloom almost swarmed with common Diurni, such as *Epinephcle tithonus*, &c., and the falling off in their numbers since then is almost startling; and this I quite agree with Dr. Rendall is owing to "sootilisation," and I think we may add the long continuance of cold summers until this year. I have not myself seen Lepidoptera so common since, as they were before, the celebrated wet summer of 1860, which, I believe, caused the extinction of several species in certain localities. I believe the east and north-east of London suffer most acutely from "sootilisation," the prevailing wind, taking the whole year round, being from the south-west; and in proof of this anyone has only to visit one of the large lakes in Wanstead Park and examine the north-east corner of it after a south-west wind, and the fuliginous scum he will find deposited thereon will soon convince of the reality and solidity of "sootilisation." This sooty deposit, which is so apparent on the water, must fall on vegetation in like manner, and no doubt has caused sad havoc with many species once common. Nearly all the lichen has gone from the trees in the Forest, and this, I believe, is another proof of the impurity of the atmosphere. Thirty years ago I used to take many common species of Micros on an old fence at Hackney, but you may go round the park palings here and never see so much as an insect of any kind. I have also, in common with Dr. Rendall, noticed in this neighbourhood the great scarcity of Lepidoptera round the street lamps. What has become of *Bombyx neustria*, once so great a pest on fruit trees and whitethorn hedges almost close to London? It seems to have totally disappeared; and *Odonestis potatoaria* seems

to have shared its fate. *Vanessa io* seems also to have gone, and many other species I could name. The same remarks will also apply to some of our Coleoptera. I have not seen *Cetonia aurata* or *Melolontha vulgaris* for years, and I need hardly say how common they used to be; and where I have now lived for the past eight years I have never even seen a specimen of the common *Carabus violaceus*, which I used years ago to so often find smashed on the pavements in the mornings, having fallen a victim to some nocturnal "beetle-crusher." It would, I think, be very interesting to our younger entomologists if some of our veterans would from time to time give some account of the localities round London and what they *used* to produce. In conclusion, I may add that I think our greatest enemy is undoubtedly "sootilisation"; and as this extends in conjunction with building operations, &c., we shall have to go further afield to obtain the species which a few years ago a short walk in the country would have enabled us to collect.—C. J. BIGGS; 3, Stanley Terrace, West Ham Park, London, E.

LONDON LEPIDOPTERA.—Dr. Rendall's notes, in the last number of the 'Entomologist' (Entom. 198), have much interested me, as I have been in the habit of recording the species of Lepidoptera found in London for some years past. To the list given by him I am enabled to add a few. In 1869 I observed the common blue (*Lycæna icarus*) in several of the London squares, but have never seen it in the metropolis since. In 1879 or 1880, *Zeuzera pyrina* was extremely common in the squares; I had more than a dozen brought me found on tree trunks in Euston Square alone. When living at John Street, Bedford Row, a specimen of *Notodonta ziczac* once flew in through the open window attracted by the gaslight. The moth was a female, and commenced laying eggs soon after being captured, a good series having been bred from these the following year. To the list of Noctuæ may be added *Hadena trifolii* and *Caradrina quadripunctata*. I have seen also *Amphipyra pyramidea*, *A. trago-pogonis*, and *Mania maura* taken at sugar at Highbury. Amongst Geometræ I have occasionally seen *Crocallis elingvaria* in the parks. Of the Pyralidæ the most interesting capture is a specimen of *Spilodes sticticalis*, which was taken in Gray's Inn Gardens in 1880. Amongst the Tineinæ, *Hyponomeuta padellus* seems to be very common in London this year; and *Chrysoclysta linnella*

is of course well-known as a cockney moth. I forward this note with a view to its being of use to any entomologist who is contemplating the production of a complete list of metropolitan insects.—R. MELDOLA; 6, Brunswick Square, W.C., Aug. 4, 1887.

LEPIDOPTERA IN MONMOUTHSHIRE.—Having had three weeks' and a half collecting in Monmouthshire, I may say that I have found the latter part of July and the beginning of August a very favourable time there for insects. Among others, I was pleased at securing a long series of *Vanessa c-album*, which were very common in all parts, but especially near Tintern Abbey on the banks of the Wye. It occurred most frequently on the blackberry, disputing possession with *Argynnis paphia*, which was also one of the commonest species here. I took one peculiar variety of a male *paphia*, in which the black markings on the under side of one of the fore wings are run into one large blotch, extending from near the base to beyond the centre of the wing. I took *Argynnis adippe* and *A. aglaia* sparingly on sunny days between Usk and Chepstow, and in other parts. I notice that Newman gives Heullis Wood as the only locality in the county, but if looked for I have no doubt they would be found in many other parts. *Vanessa urticæ* was one of the commonest butterflies everywhere; and in the middle of July I also saw the larva of *V. io*, and took the perfect insect fresh from the chrysalis a little later. *Melanarge galatea* appears to be rather scarce; I saw a few specimens in Went Wood, four miles from Usk. *Pararge egeria* and *P. megæra* were frequent, but not common; probably the second brood would not be out till a little later in the year. I secured a few specimens of *Epinephele ianira* with one or more wings bleached; all of these were females. *E. tithonus* and *E. hyperanthes* occurred in every part of Monmouthshire in great numbers; I took one variety of the latter insect in which the usual rings on the under side are reduced to four white points on each of the lower wings, and are quite absent from the fore wings. *Cænonympha pamphilus* was not uncommon; and I took specimens of *Polyommatus phlæas*, and several of the genus *Lycæna*. I am not aware whether any varieties of the under side of *Lycæna icarus* have been noticed,* but among those I took some have no eye-spots at all on the fore wings between the discoidal spot and the base†; some have in this space two and others three eye-

* Entom. 75.

+ Var. *icarinus*, Scriba.

spots; and one variety has two eye-spots on one wing, and only one on the other, the second spot being reduced to a pure white speck. The Hesperiidæ and commoner Pieridæ appeared as usual in large numbers; but I was struck with the preponderance of *Pieris napi*. I did very little moth collecting, and those taken were mostly of the commoner sorts. Among these were *Melanippe procellata*, *Acidalia emarginata*, *Cidaria dotata* (*pyraliata*), &c.; *Acipitilia pentadactyla* occurred in hundreds, and some other moths of that family were frequent; also several species of *Eupithecia*, which I am unable to name. Among Coleoptera, I took the larvæ, pupæ, and perfect insect of *Dorcus parallelipedus* in numbers from the stump of a decayed oak tree; *Strangalia armata* on brambles; and a species of *Harpalus* also in the above oak stump. *Lagria hirta* appeared everywhere; as also *Coccinella bipunctata*, *C. 7-punctata*, *C. 19-punctata*, *C. obliterata*, *C. 11-punctata*, *C. 5-punctata*, and *C. variabilis*. *C. 7-punctata* varied considerably in colour, from deep red to orange and pale yellow. I obtained a few Diptera, and among them the beautiful humble-bee fly.—CHARLES E. M. INCE; 11, St. Stephen's Avenue, Shepherd's Bush, London, W., August 13, 1887.

COLLECTING IN COLORADO.—After a day's journey from Denver I arrived here, at West Cliff in Custer County, on the evening of July 13th, and since then have experienced the mixed pleasure and bewilderment of coming into an entirely new country, with a varied and unfamiliar fauna. The district is an elevated valley, about 8000 feet above the sea-level, and surrounded by mountains; on one side the Sangre de Cristo range, and on the other the Wet Mountains. All orders of insects are abundant, but more especially Coleoptera and Hymenoptera. A red-brown *Pterostichus* is very abundant under stones and fallen timber; a *Necrophorus* like *ruspator*, a *Hister*, and a *Silpha* occur under dead bodies of animals; a *Clytus* of rather small size is frequent; and a fine green *Buprestis* was taken on my window. A large *Bombus* abounds, and with it a smaller species, and two species of *Vespa*. Ichneumons and ants are without number; and a pretty greenish blue *Chrysis*, not unlike *cyanea*, is common. The open prairie is covered with large stones and sparse vegetation, and produces a small black *Scarabeus* and a *Lygaeus*, as well as plenty of small Coleoptera and Arachnida. Light is fairly successful as a means of capture, only it is rather spoilt by the

presence of innumerable specimens of one of the larger *Pyralides* and a red-brown Ichneumon. Noctuæ are perhaps less numerous than in England; but there are plenty of Geometræ, including three or four green Geometridæ. A fine *Smerinthus*, allied very closely to *ocellatus*, but with greyer upper wings, flew in one evening; doubtless the larva had fed on the *Populus tremuloïdes*, which grows thickly by the door and all down Swift Creek. Grasshoppers (Locustidæ) are very abundant; and of many species, one kind, with a sooty-coloured thorax and upper wings, and under wings half black and half yellow, makes a loud clicking noise as it flies jerkily through the air. A curious case of what I suppose to be protective resemblance occurs in a species of *Tipula*, which has a black head and thorax and the anterior two-thirds of the abdomen red-brown, and the posterior third black, thus having the closest superficial resemblance to species of Ichneumonidæ, which are abundant in the same locality as the *Tipula*. The commonest species of Rhopalocera is *Colias eurytheme*, and with it *Pieris oleracea* and *P. protodice* occur in less numbers. *Anosia plexippus* flies by the road-side, *Vanessa antiopa* is frequent in damp places, and *V. milbertii* settles by muddy pools.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, U.S.A., July 27, 1887.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—August 3rd, 1887. Dr. D. Sharp, President, in the chair. Mr. John Witherington Peers, M.A., of Wendover, near Tring; and Mr. R. G. Lynam, of the North Staffordshire Infirmary, Stoke-on-Trent, were elected Fellows of the Society. Jounkheer May, the Dutch Consul-General, exhibited a pupa and two imagos of *Cecidomyia destructor* (Hessian Fly), which had been submitted to him for exhibition by the Agricultural Department. Mr. W. White exhibited, and made remarks on, a specimen of *Philampelus satellitia*, Linn., from Florida, with supposed fungoid excrescences from the eyes. Mr. Stainton said he was of opinion that the supposed fungoid growth might be the pollinia of an Orchis. Mr. Poulton expressed a similar opinion, and the discussion was continued by Mr. Pascoe, Dr. Sharp, and others. Mr. White also

exhibited a specimen of *Catephia alchymista*, bred from a pupa collected by Mr. Ralfe last autumn on the South Coast. Mr. McLachlan sent for exhibition a number of oak-leaves infested by *Phylloxera punctata*, Lichtenstein, which he had received from Dr. Maxwell Masters, F.R.S. Mr. Champion exhibited two rare species of Curculionidae from the Isle of Wight—viz., one specimen of *Baridius analis*, and a series of *Cathormiocerus socius*. He remarked that *C. maritimus*, Rye, had been placed in recent European Catalogues as a synonym of the last-named species, but that this was an error. He also exhibited a series of *Cicindela germanica* from Blackgang, Isle of Wight. Mons. Alfred Wailly exhibited, and made remarks on, a number of living larvæ of *Antheræa pernyi*, *A. mylitta*, *Telea polyphemus*, *Platysamia cecropia*, *Actias luna*, *Attacus cynthia*, *Callosamia promethea*, and other silk-producing species. He also exhibited imagos of the above species, imagos of *Antheræa yama-mai*, and a number of species of Diurni from Sarawak. Mr. Poulton exhibited crystals of formate of lead obtained by collecting the secretion of the larva of *Dicranura vinula* on 283 occasions. The secretion had been mixed with distilled water in which oxide of lead was suspended. The latter dissolved, and the acid of the secretion being in excess the normal formate was produced. Prof. Meldola promised to subject the crystals to combustion, so that their constitution would be proved by the final test. Mr. Oliver Janson called attention to Mr. Pryer's new work, 'Rhopalocera Nipponica,' and to the fact that the illustrations had been executed by Japanese artists.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 28th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. The Rev. W. F. Johnson was elected a member. Mr. J. T. Williams exhibited bred examples of *Phorodesma smaragdaria* and *Dianthæcia irregularis*. Mr. West (Streatham), *Apamea ophiogramma*, taken in his garden at Streatham flying over ribbon-grass, which he had reason to believe was the food-plant of the species. Mr. Tugwell, *Apatura iris*, with pupa-cases. Mr. Hall, varieties of *Abraxas grossulariata*. Mr. South, two varieties of *Melitæa cinxia*, the usual dark fulvous marginal band of the under side breaking up into spots, or having a tendency to form ocelli. Mr. South stated that the two specimens were taken in the Isle of Wight, in the same spot, on the

11th and 17th June respectively, the first one being a male and the second a female. Mr. Dobson, a number of species of Lepidoptera from the New Forest. Mr. R. Adkin, living larvæ of *Spilosoma mendica*, reared from ova obtained from the Cork form of the species. Mr. Sheldon, *Pempelia palumbella*, from Leith Hill, *Ephippiphora nigricostana* (bred), and *Eupæcilia amandana*, which he stated he had taken in great numbers near Croydon, and the species seemed to fly for about two minutes only.

August 11th.—R. South, Esq., F.E.S., Vice-President, in the chair. Mr. Watson exhibited *Catocala promissa*, from the New Forest. Mr. West (Streatham), bred *Sesia asiliformis*, varieties of *Lycæna corydon*, and *Argynnis euphrosyne*. Mr. Wellman, *Dianthæcia albimacula*, *Bryophila muralis*, a yellow variety of *B. perla*, *Plusia interrogationis* from Perth, dwarfed forms of *Aspilates gilværia*, *Eubolia bipunctaria*, and *E. limitata*; and living larvæ of *Chariclea umbra*, feeding on knot-grass. Mr. Mera, *Thera simulata*, from Ireland. Mr. Fremlin, a variety of *Vanessa urticæ*. Mr. South, a variety of *Triphæna comes*, the hind wings being a creamy white instead of bright yellow; a variety of *Vanessa io*, having a small extra ocelli on the hind wing. Mr. Helps, *Macroglossa stellatarum*. The Secretary, on behalf of Mr. Lewcock, exhibited a number of species of Coleoptera, obtained chiefly in Surrey, and read notes. There were twelve species of Donaciæ, including *Donacia hydrochæridis*, *D. lemnae*, *D. linearis*, *D. menyanthidis*, and *D. comari*. Also *Bembidium lunatum*, about a dozen specimens taken on the banks of the Thames at Rainham, Essex, in August, 1866; but it appeared, from Mr. Lewcock's note, that previously to this he had only come across the species singly. Several species of *Malachius*, *Cionus verbasci*, *Cryptocephalus lineola*, and many others were also in the box, the whole forming a most interesting exhibit. The Secretary read a letter from Mr. Adkin, recording the unusual abundance of *Pieris brassicæ* and *P. rapæ* in the neighbourhood of Eastbourne; and several members contributed the result of their observations in different localities; and a discussion ensued as to the probable cause of the appearance of these species in such numbers in the southern counties, in which Messrs. Rendall, South, Carrington, Tugwell, Wellman, Hall, Step, and others took part.—H. W. BARKER, Hon. Sec.

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NOTES ON ENTOMOLOGICAL CLASSIFICATION.

BY GEO. VERNON HUDSON.

IN an isolated country like New Zealand, where there are no public collections of insects and very few standard works of reference accessible, the entomologist who wishes to correctly ascertain the names and relationships of his insects is beset with difficulties, and the complete inefficiency of the present system of classification and nomenclature is made only too apparent. In the following notes I wish to draw the attention of your readers to a few suggestions, which I think would much simplify the present arduous task of arriving at the name of an insect.

In the first place, it appears to me that entomologists have no clear idea as to what ought to constitute family differences, generic differences, and specific differences; and that a diversity of structure, &c., that one regards as very unimportant, another considers sufficient to establish a new genus or even family upon. Again, I think that the *use* of the generic name has been completely lost sight of. If I understand correctly, the object of the genus was to facilitate the finding of the species; but now that genera are so excessively numerous and founded on such trifling differences, they are, in the majority of cases, just as hard to trace out as the species themselves; hence I contend that the present generic name is quite useless. It will thus be seen that I advocate a vast increase in the extent of genera and a great reduction of their number. The same argument will apply to families, whose members should have many very marked differences in common,

so obvious that the most cursory examination should detect them; thus the placing of an insect, as respects its genus and family, would be an easy task for the earliest beginner.

By thus denuding our science of its cumbrous technicalities we should at once render it more accessible to outsiders, and investigation would progress with much greater rapidity than it does at present, while the subject is fenced in, so to speak, by a needlessly complicated classification. Some of the time, also, which is wasted over searching out these unimportant distinctions would be much more profitably employed in elucidating the insect's habits, transformations, and internal anatomy,—a branch which is now sadly neglected. Another great advantage resulting from the use of large genera would be that species could not be established on such insufficient characters as they now often are. The presence of a great number of others in the same genus would render abundant distinctness necessary. It would thus greatly reduce the chance of the same insect being described twice over, and prevent synonymy to a very great extent.

I think that a fair estimate of the value of the genera at present in use may be gathered from the following:—In Mr. Butler's lists of New Zealand Noctuina, we have *Hadena debilis*, *Meterana pictula*, *Auchmis composita*, *Xylophasia rubescens*, and *Xylina ustistriga*, these insects being all referred by Meyrick to the genus *Mamestra*. Both these gentlemen are eminent lepidopterists, and both found their classification, I conclude, on the structural differences of the imago, yet how diverse are the results which they each arrive at. Numerous other instances of the same kind are doubtlessly well known to entomologists, and the conclusion is forced upon one that generic distinctions have become so ultra-refined that the very object of the genus is lost sight of, and at present entomological authorities are incompetent to determine what distinctions are of sufficient importance to be entitled to be recognised as generic.

To an ordinary student it must be admitted that a list of the names of the insects inhabiting any distant country is of little interest or instruction, owing to the majority of the genera and many of the families being unknown to him. Were these so far extended as to include insects inhabiting his own country, these lists would lose their dryness and become replete with interest, showing him the precise characteristics of the new fauna and its

peculiarities. This, I think, may be taken as one of the most forcible arguments in favour of a general classification, whose genera should embrace species from all parts of the world.

The adoption of such a system as I have indicated above would unquestionably be a matter of great difficulty, but I am satisfied that the time will come when something of the kind will have to be done. It needs but a slight retrospective glance to see how very much more complicated the classification of insects is now than it was a few years back; and when we reflect that there is nothing to prevent every entomologist from subdividing his own favourite little group to an almost unlimited extent, I think the necessity of some method of generalisation on broad principles will be obvious to everyone.

For purposes of every-day reference the genus is clearly the most important division, because in conjunction with the specific it is that by which the individual is always referred to, the two together forming in fact the "surname" and "christian name" respectively.* It therefore appears that the object to be aimed at is the extension of genera. This being done, the families must, of necessity, also become extended; and I think the following rules would be useful in classifying on this basis:—

The divisions subordinate to the order to consist of only three kinds,—families, genera, and species.

No genus to be constructed unless its members have several important attributes in common during *all their stages*.

The families would, of course, consist of a series of these genera, bound together by more important characteristics in common.

The highest object of entomological classification is to unite allied species in groups, in order to give a concise view of the great class Insecta, a result that can never be attained by endless subdividing; but even this systematic arrangement, however useful, cannot surely be regarded as the ultimate result of entomological research, as would in fact appear from the amount of attention at present bestowed upon it.

* It certainly seems a most unfortunate mishap that in biological classification the term "family" is applied to a group of genera or races. Were the terms transposed it would certainly seem more in accordance with common sense, but this of course is a reform that it is beyond the scope of entomologists or any other departmental naturalists to attempt.

In conclusion I shall illustrate my remarks by a suggested classification of the British butterflies, insects familiar to everyone, on the broad principles above given.

Family PAPILIONIDÆ, including all butterflies, or those Lepidoptera possessing a distinct club to the antennæ, and diurnal flight.

Genus *Papilio*.—Imago usually of large size, with six perfect legs in both sexes; the markings generally consisting of pale colouring, such as white and yellow. Larva smooth. Pupa angular, attached by the tail with a silken girdle round the middle. It would include the following species:—*machaon*, *rhamni*, *edusa*, *hyale*, *crategi*, *brassicæ*, *napi*, *rapæ*, *daphidice*, *cardamines*, and *sinapis*.

Genus *Satyrus*.—Imago of medium size; front legs imperfect in both sexes; the wings nearly always much ornamented with ocelli. Larva with bifid tail spineless. Pupa suspended by the tail, but not angular, being occasionally, however, enclosed in a slight cocoon. Includes the following species:—*galatea*, *egeria*, *megæra*, *semele*, *hyperanthes*, *tithonus*, *ianira*, *blandina*, *epiphron*, *typhon*, and *pamphilus*.

Genus *Danais*.—Imago usually of large size, with very powerful wings and soaring flight; rarely marked with ocelli. Larva smooth, with fleshy processes. Pupa suspended freely by the tail, and slightly angular. Includes *plexippus*, *iris*, and *sibylla*.

Genus *Vanessa*.—Imago of moderate size, usually very richly coloured. Larva with numerous branched spines. Pupa very angular, suspended by the tail, and nearly always ornamented with metallic spots. Includes *cardui*, *atalanta*, *io*, *antiopa*, *urticæ*, *polychloros*, *c-album*, *paphia*, *aglaia*, *adippe*, *latona*, *cinxia*, *euphrosyne*, *athalia*, *artemis*.

Genus *Lycæna*.—Imago small; six perfect legs in female, four in male. Pupa secured by tail with a girdle round the middle, and not angular. Larva onisciform. Includes *lucina*, *betulæ*, *quercus*, *rubi*, *w-album*, *pruni*, *phleas*, *hippothoe*, *argiolus*, *arion*, *minima*, *icarus*, *ægon*, *astrarche*, *corydon*, and *bellargus*.

Genus *Hesperia*.—Imago of small size, very robust; six perfect legs in both sexes; hind tibiæ often spurred. Larva cylindrical, with no spines; feeding in rolled-up leaves. Pupa

enclosed in a cocoon. Includes the "skippers," *malvæ*, *palæmon*, *comma*, *tages*, *thaumus*, *sylvanus*, and *actæon*.

It will doubtlessly be urged that in the genera above given there are many groups of species resembling one another more than they do other members in the same genus. This is a difficulty, however, that can never be got over by subdividing. Take, for instance, the genus *Vanessa*, as at present restricted, and who will not admit that *urticæ* and *polychloros* are more closely allied to one another than either are to *io* or *antiopa*? While another species, *c-album*, bearing the closest resemblance to *polychloros*, is placed in some arrangements out by itself in the genus *Grapta*.

Another subject which I think calls for a brief notice is the use of complimentary names, which are unquestionably to be deprecated, bringing as they do the science into ridicule and contempt. I may say that among New Zealand insects this foolish practice of naming species, and even genera, after individuals has obtained to a lamentable extent, as may be seen from our catalogues, which consist of little else but personal names.

Wellington, New Zealand, July 25, 1887.

THE EDUCATIONAL VALUE OF ENTOMOLOGICAL COLLECTIONS.

BY JAMES W. TUTT, F.E.S.

MR. CALVERT (Entom. 196) has written a most interesting article, many of the remarks in which the readers of the 'Entomologist' will undoubtedly endorse most heartily; but it seems rather to deal with the defence of the time spent on Entomology than the phase Mr. Coste seemed to me to wish to present (Entom. 93), *viz.*, the "educational value of forming a collection by a collector of limited time, and whether, considering the immense amount of labour entailed in setting the specimens, the educational result is worth the time spent on it."

As an ardent entomologist and a professional educationist, I must state that I believe the ground Mr. Coste has taken up practically unassailable, and that the time that really enthusiastic

entomologists spend on Entomology does not produce one-half the educational result that other subjects would by spending a very small fraction of the same time on them. That there is some educational value every educated person must confess, and Mr. Coste states this most positively in his article. The question is the amount of educational advantage obtained compared with time spent. Concerning the educational value of Entomology, the great value of Entomology seems to be that it increases our powers of observation and discrimination. No science could increase them better, but there are branches of science where the powers of observation and discrimination are equally developed. Botany would do so, and with less laborious indoor work, although a good deal of that is needed if a good botanical collection is made. The power of reasoning is developed but little comparatively by the science, and all other senses are equally or more specially developed by other subjects with far less labour. From this I must except order and regularity, developed by the proper arrangement and classification of the insects we collect. Would any reasonable man suggest that his son should be put through a course of Entomology for its educational value? I have put hundreds of lads through a course of "General Biology" where Entomology has had its place equally with the great facts of Physiology, Zoology, and Botany; but to deal with it specially as an educational means has never entered my mind, enthusiastic entomologist though I have been for years.

This is the view I believe Mr. Coste meant to place before the readers of the 'Entomologist,' and I may say emphatically that if a man takes up a subject entirely from an educational point of view and with the idea of improving his general education, he would do infinitely better to put himself through a course of Physics, Biology, Mathematics, or some such science. If his taste incline to Natural History, let him take it up as a whole; he will get a greater educational result out of it. One or two seasons spent in collecting Lepidoptera would be sufficient to give a collector the knowledge of the habits of many species, a knowledge of the embryological states, of the differences in structure of the various larger families, and metamorphoses through which Lepidoptera pass; in fact, all the chief educational points, as well as a knowledge of classification.

We now come to another phase of the subject. If educationally "the game is not worth the candle," and I am satisfied it is not, is the time we spend on Entomology defensible, or is such time wasted? My answer to this is, that the time spent on Entomology is perfectly defensible, and that such time is not wasted. Entomology as we study it, or rather the entomological collections which we make,—and to me there is a vast deal of difference here,—is a hobby, purely and simply a pleasant occupation to fill up spare time, and an illustration of the old couplet, that "All work and no play makes Jack a dull boy." The harder we work at our daily labour the more necessary is recreation for our physical and mental health. After most severe mental work I find I can always turn to Entomology with pleasure, and after an hour or so feel entirely invigorated. Is this education? It may be. I think it recreation. It is a pleasure to me, and I dare say it is to hundreds of others. Again, not only is the collection in itself valuable as a relief to which one can turn at any time, but the actual process of collecting is in itself to be considered. The formation of a collection is in itself an incentive to outdoor exercise and recreation; and to men of sedentary or indoor occupations, what does this mean? Only those so engaged can tell, and those in large towns—London, Liverpool, &c., where the conditions are emphasised to an alarming extent—feel the reaction more than all. I have often thought that it is this feeling or craving for the country that has increased the number of entomologists in our large towns to such an extent, as compared with those in the rural districts.

I think I have said enough in defence of the time we spend on Entomology, and I believe I am right in the view I have taken of Mr. Coste's article. He undoubtedly, when he wrote his article, was fully convinced that there was an educational value in Entomology; the point he wanted discussed was whether the educational result obtained was at all equal to the time spent on the subject. Let me consider another point in connection with the question. What time do we spend on Entomology? and what educational value is returned for this time? For this purpose we may consider the question under three heads:—

1. The actual collecting of specimens.
2. Pinning and setting.
3. The arrangement of the collection.

(1) Whatever time is spent on the actual collecting of specimens is time well spent, educationally and otherwise. One learns incidentally something of Geography, Meteorology, Botany, and perhaps a little Geology. The collector's powers of observation are greatly increased, and one can hardly find anything that has a better educational value from this particular point of view. The amount of time is therefore unimportant. The greater or less the amount of time spent, the greater or less will be its gross value. (2) As the specimens must be kept, whatever the subject of study, the time spent on pinning need not be considered. In my mind nearly the whole of the time spent on setting is wasted educationally and scientifically. I certainly do not know exactly what time entomologists, as a body, spend on setting, but I find I can set about 20 to 25 insects per hour, on an average. Many of the *Tineina* require a much greater amount of care, and 15 to 20 would be a fair estimate. Taking it, therefore, that a collector takes 100 insects as the result of a day's collecting, he will be about five hours setting his captures. Is the study of the "flexibility of the wing, its debility, hardness," &c., worth this time to a man who is seeking for self-improvement? and when this is repeated day after day and year after year this as a result becomes ridiculous. Presuming I have spent on an average 500 hours per year in setting insects for the last seven years, am I to be told that the educational value of these things is at all commensurate with the time spent? We do not get new species every time we go out, and yet we get a large number valuable to ourselves and friends. These have to be set—*custom* demands it. The question is, Is the custom a good one? and what was the original reason of setting? Considering the latter question first, there is no doubt that setting was originated so that all the wings might be studied. There is no doubt, then, that the answer to the first question is, that the custom is a good one. But what has setting developed, I might say degenerated, into? Science demands that we should be able to examine all the wings. To have the wings, therefore, drawn out at any angle, so that the whole of them is in view, should be sufficient. But what do we find? We find that in 99 cases out of 100 our collectors study symmetry, and symmetry only. What does it matter to them so long as the angle between the anterior and posterior wings is so exact that the most perfectly trained eye cannot

distinguish the slightest difference? What do they care about the hind wings being half covered up? This system of setting takes all the time, and in the end what is its value? Will anyone venture to assert that there is any real educational value in it? It is a purely mechanical operation. I repeat that there is very little science or educational value in this exactitude, and that the setting could be done just as well for educational purposes in much less time. I quite appreciate good setting, if the individual says, "I do it for pleasure or recreation"; but to argue that our system of setting is of educational value is another thing. One might say that you can make a more exact study of an insect while you are setting it; but this I doubt. Setting takes up a large amount of time. It is a slow, mechanical, and monotonous process, trying to one's patience, and I might add to one's back, without a corresponding return from any point of view. But setting is adopted by most entomologists. We are gratified by the beauty of our specimens when thus set, and I suppose it will thus go on whilst the study of Entomology exists. Can anyone tell me whether any of our really scientific entomologists has a collection of *unset* insects, and does not set his specimens? I feel certain there must be some individual above the popular prejudice.* (3) The arrangement of the collection is another purely scientific and educational matter, and worth all the time spent on it. A man who can classify the families, subfamilies, and genera of Lepidoptera has grasped the whole educational principle involved in such-like studies,—the need of arrangement and order, the advantage of system over chaos.

I dare say my views will be pooh-poohed by many entomologists, but I speak, as stated, as a professional educationist. The scientific lepidopterists of Britain can almost be counted on the fingers of the hands, or at any rate those who are publicly useful as such in making known their views for general use. The writers on popular branches of the subject perhaps number 50, and those who record captures, &c., 200 or 300 more; but of what scientific value is the work of the others? They *collect* Lepidoptera, and want a series. They care little about the habitat or anything else in connection with the natural history of a species. They

* We believe that more than one scientific entomologist in this country, including Mr. Edward A. Fitch, F.L.S., recently Secretary of the Entomological Society, considers it unnecessary to set the specimens in their collections.—Ed.

have another addition,—a thing of beauty; and it is sufficient. Of such are the great mass of us. Are we to be discouraged? and is our work useless? I say decidedly, no! The man who can turn, after his daily toil, to admire his beautiful entomological treasures is to be encouraged. It is educative, as far as it goes. It leads such a man to think, and opens to him something unknown to others of his own class. To those who already have a fair education it is a pleasure and a recreation, a labour of love. If we do the great mass of humanity no good, we do them no harm; and we improve our own minds. Among such, I class myself; and it is worthy of remark how many entomologists, who, commencing to collect in their boyhood, obliged when manhood comes on to give up their favourite pursuit to provide for their daily bread, take to it again in mature years as a relief and pleasure after their final struggle for mere existence is over. Entomology with the mass of entomologists is a recreation, whatever they may choose to call it—Science or otherwise. As such, it gives us great pleasure and affords some amount of education; at the same time I defy anyone to prove that a man would improve his education by taking up Entomology as a study, compared with what he would gain if he spent the same amount of time on other subjects.

With Mr. Calvert's answer to the question, "Of what educational value is such a collection?" (Entom. 197), I partly agree and partly disagree. I perfectly agree with the first part, but the latter seems ridiculous. Who is most likely to get wet? The collector who goes into the country collecting at every possible chance and at all times of the day and night, or the man who, choosing his own time, goes from his own house to the museum, and can make every preparation for the weather. I should like Mr. Calvert to have been with me the first night I spent on the Deal sand-hills in 1883. He would have found that collectors sometimes get wet.

His answer to the last question (Entom. 198), "From an educational and scientific standpoint is the game worth the candle?" does not seem to touch the question. He shows that it sometimes may be from a monetary point of view, but surely this wants a good stretch of imagination to convert it into "educational and scientific." The collecting and arranging of entomological specimens, I have tried to show, has an educational

and scientific result, which is "well worth the candle," but setting puts the matter out of court; and the hundreds of hours I have spent on setting I consider educationally wasted. I collect for a hobby—I treat it as such.

We are sure to have a plentiful addition of young recruits to our ranks. A mild form of science, coupled with a fine field for recreation, both in mind and body, is sure to attract a fair number of workers in the cause. But let them enter under the "true colours." Don't try to entice them into our ranks with the idea that their education will thereby be materially improved, but show them that it is a most healthful pastime to those who have leisure, and can afford to spend time and energy on a pursuit that must bring them a vast amount of personal satisfaction and pleasure.

To the man seeking for education in entomological pursuits, I would say,—make a small typical collection of the great group Insecta; or, better still, if the student desires to take a wider field, of the families Annulosa and Mollusca. Classify correctly by all means, have good perfect specimens as far as possible; but if the student's time is limited, let setting go to the wall. The collection would not be worth much to those who buy Natural History specimens, like some people buy "old pots"; but the educational value of such a collection to the individual making it can hardly be over-estimated.

Snowsfield's Board School, Bermondsey, S.E., August 22, 1887.

NOTES UPON NEPTICULIDÆ.

By J. B. HODGKINSON.

ON the 13th of April I reared four specimens of *Neptacula hodgekinsoni* from a variety of garden rose, and from the same shrub three others of the genus, two of which are as large as *N. aurella*; possibly they are of the latter species, though they were reared in sealed and labelled boxes. In the same month I bred what should be *N. splendidissimella*, from leaves of dewberry (*Rubus cæsius*) which I gathered near Southport in September previously. My experience of *splendidissimella* coincides with that of the late John Sang, that it is a strictly raspberry-leaf

feeder and single brooded. It is a much finer and more delicate mine than that of *N. aurella*. I again found the larvæ early this September, the raspberry growing among brambles which were mined by plenty of *N. aurella*. Next to appear were a few *N. graciosella*, *N. ignobilella*, and *N. pygmæella*; also *oxyacanthella* from hawthorn. From birch came *N. argentipedella* and *continuella*; of the latter I had only a few mines. I bred about thirty specimens of *N. headleyella* from larvæ kindly sent me by Mr. W. H. B. Fletcher. *N. glutinosæ* were a sad failure; of about forty larvæ which changed to pupæ and looked well I did not rear one moth. Nearly the same may be said of *N. intimella*, for I had more than fifty cocoons, and only bred two specimens from sallow leaves, but I got a dozen *N. salicis*. Of *N. luteella* a very few appeared.

During the months of June and into July I took a considerable number of Nepticulæ; some I cannot determine. *N. luteella* and *intimella* were fairly represented. My best catch of *N. intimella* got lost; the canister and a lot of boxes in it slipped out of my pocket. *N. glutinosæ*, *N. alnetella*, and *N. continuella* were among the best in July and August; I went fairly in for larvæ of *aucupariæ*, *lapponica*, and another birch species, probably a new species. The larva feeds differently to any I am acquainted with; it occurs on ground I had not trodden since 1863, and then I was not after Micro-Lepidoptera. I also found *N. continuella* quite common; I must have taken several scores. From August 18th to 25th I took about two dozen of what I expect will prove *N. hodgkinsoni*.

I made two journeys to a district where I had not hunted for Nepticulæ, to see if I could find any *N. tilia*,—a locality I should think as yet unvisited by entomologists. I saw one tree of *Tilia parvifolia* infested by this little larva, and took over a hundred of the mines containing larvæ; but the majority were empty. The mines of this species are easily seen. Another tree about a mile away produced a lot, some full-fed, others very young. Here I saw a sight unknown to me which I think should be noted, viz., what I suppose to be the larvæ of *Bucculatrix thoracella* (*hippocastanella*) hanging by threads; presently I found a little snowy-white circular cocoon on the surface of a lime-tree leaf. I found no more, but on my return a few hours later they were in plenty on the leaves collected, the larvæ

having thus quickly encircled themselves. I had only an hour to spare after a long and hot day's work, but was fortunate enough to find other species of *Nepticula*, one being in leaves of the species of *Potentilla* which *Peronea aspersana* rolls up when in the larval state; another was in leaves of the lesser burnet (*Poterium sanguisorba*), which should be *N. poterii*. The other was *N. cryptella*, in the leaves of *Lotus corniculatus*; this I recognised, having seen it before near Darlington.

Everything was scorched with the great heat, but in the thickets was Solomon's-seal, a variety of plants somewhat strange to me. There was a bramble, which I make out to be *Rubus saxatilis*, containing *Nepticula* mines, but I only got one larva, which I fear is dead. I hope to visit the locality next season, and work up these interesting species.

Another instance of bramble mining occurred to me at Port Erin, in the Isle of Man, where the leaves were chequered by *Nepticula* mines, but whether of *N. aurella* or not time will tell, though the mines are broad enough for another species.

On Sept. 13th I met with *N. myrtillella* among a very few examples of its food-plant, there being two or three mines in a leaf. Of *N. alnetella* or *glutinosa*, fair numbers occurred on the alder leaves, but, as usual, this season great quantities were dead in the mines, killed by the extreme heat. There was in the leaf a large mine, broad as that of *N. aurella*, the larvæ in them being yellow. *N. ignobilella* was in hawthorn leaves, and *N. angulifasciella* was abundant on the roses; I never noticed before that it has a row of spots distinctly shown down the back. *N. marginicolella* occurred on elm; *N. septembrella* in leaves of *Hypericum*; and on sallow were either *N. salicis* or *N. intimella*, I cannot decide which from the mines; *N. æneofasciella* on agrimony.

Ellerslie, Ashton-on-Ribble, Preston, Lancashire, Sept. 14, 1887.

THE MONGREL-HYBRID THEORY.

By CHARLES A. BRIGGS, F.E.S.

It is much to be regretted that Mr. South has tried to import *Polyommatus phleas* and *Thecla rubi* into a discussion that already was sufficiently ample in its scope. He tells us

(Entom. 123) that *Lycæna corydon*, *L. icarus*, *L. bellargus*, *L. hylas*, *L. escheri*, and *L. eros* are all from a common stock in direct descent; and that *L. icarus*, *P. phleas*, and *T. rubi* are all from a common ancestor (Entom. 220). What other descendants he may in time father upon this versatile and highly gifted predecessor we do not as yet know.

Lycæna icarus, he tells us (Entom. 125), is the most ubiquitous and the dominant form in the group. Is this why he selects it, with *corydon* and *bellargus*, to be branded as an impure species? Are *hylas*, *escheri*, *eros*, *rubi*, and *phleas* to be regarded as pure, and if so, why?

That these species ever had a common ancestor may or may not be the case; but, as all that we can be absolutely certain of is that there is not the slightest scintilla of evidence of such being the case, or any real necessity for such an idea being set up, this convenient and ingenious theory may be dismissed as "out of the range of practical politics." The real cause of Mr. Sabine's varieties (I call them his, as he, so far as I know, first recorded them) has yet to be found; but it should, I think, be sought in the present, not in the past,—probably indirectly in geological and directly among local or phytophagical causes.

As regards the original matter in discussion, Mr. South, if he has done nothing else, has, without any clear definition of it, given to Entomology a new word, "mongrels," which no doubt in future times will enable other theorists to get out of many an awkward fix without too great a loss of plumage.

Mr. South candidly tells us (Entom. 1) that he has given some hours to the study of such species as *L. icarus* and *L. corydon* in their native haunts, "with the object of obtaining a knowledge, as far as was practicable, of the whole range in variation of these species, in particular South of England localities"; and no doubt he has succeeded in doing so. Many of us have spent years at it, and do not consider that we have yet exhausted the subject, or found ourselves driven to the creation of theories.

From his recent papers and notes in the 'Entomologist' it would almost seem that Mr. South, having come across specimens of some species of *Lycæna* which appeared to a certain extent either to partake of or to resemble characters belonging to other species of the same genus, first jumped to the conclusion

that these specimens must therefore be hybrids, and then, finding himself face to face with the difficulty that fertile unions of different species of *Lepidoptera* in a wild state are known to be so rare that that theory would be open to the gravest suspicion, sets up the still more objectionable one that *Lycæna bellargus*, *L. icarus*, and *L. corydon* are not really species, but some nondescript class of creatures hitherto wholly unknown in nature, and neither fish nor flesh nor good red herring. In a word, being perplexed by *L. hylas*, he sets up his "impure" theory, and bastardises *L. icarus*; being bothered by *L. corydon*, vars. *corydonius* and *albicans*, he applies it further, and quietly finishes up by throwing in *L. bellargus* as a sacrifice to his remaining difficulties.

How eminently unsatisfactory the result of all this speculative theory is appears from the fact that Mr. Sabine (*Entom.* 40) considers his as hybrids, not mongrels, between *L. bellargus* and *L. corydon*, or between *L. bellargus* and *L. icarus*, being apparently somewhat influenced by the fact that he had once seen *L. bellargus* male in copulâ with *L. icarus* female. Mr. Jenner Weir, Mr. Sabine tells us, considers them hybrids between *L. bellargus* and *L. icarus*, he having once seen those species in copulâ; while Mr. South himself considers them as mongrels, not hybrids, between *L. bellargus* and *L. icarus*, and fertile to boot.

Like other advancers of new and wholly unsupported theories, Mr. South endeavours to fix the *onus probandi* on those who uphold the existing ideas, instead of placing it, as it should be, on those who seek to disturb them; for (*Entom.* 82) he placidly states that, so far as he knows, the sterility of a cross between *bellargus* and *corydon* has not been demonstrated, and asks whether we have any proof that the pairing of *icarus* and *bellargus* is, as regards progeny, inoperative! Seeing, however, the fresh difficulties into which his unfortunate theory was leading him, he somewhat unfairly takes to task Mr. Tutt (*Entom.* 221) for attributing to him the suggestion that *icarus* and *bellargus* copulate freely together in nature, and admits that such an idea might be characterised as improbable. But does he not overlook that Mr. Sabine (*Entom.* 181) is driven to acknowledge that such unions must in his locality be a tolerably common event, while Mr. Tutt (*Entom.* 207) says that the

Rochester collectors used to take large numbers of these varieties everywhere on the chalk hills between Rochester and Maidstone, and that it occurs through North Kent almost to Gravesend? Mr. Sabine (Entom. 181), as Mr. Tutt points out, in fact demolishes the whole theory when he asks, why do not these unions occur elsewhere also?

In my own experiences in the Folkestone and Dover district during the past twenty-five years, although I have so constantly seen *L. corydon*, *L. icarus*, *L. bellargus* and *L. medon* flying together that it may be regarded as the normal state of affairs, yet I have never known any of these species *in copulâ* with others, nor seen any specimen out of the many thousands that have passed through my hands which could reasonably be regarded as hybrid or mongrel, whatever the latter word may mean; I cannot help, therefore, thinking that the theory, not the genus *Lycæna*, has got a trifle mixed.

Boisduval, in his Monograph of the Zygenidæ,—another group of closely allied species,—mentioning instances of crossing between certain allied species of Zygenæ, states that never had he known fertile eggs result from such unions. Such is, I am sure, the experience of us all with Lepidoptera in a wild state.

In a previous paper (Entom. xix. 6), Mr. South has told us that *L. argiades* has continued to exist in England since the middle post-glacial epoch. I entirely disagree with him. To suppose that a conspicuous diurnal insect has escaped detection in England for even the last thirty years is a proposition so startling that it requires more than the enunciation of a ready-made theory to enable us to believe it, particularly in these days when the introduction of a species, accidentally or otherwise, is no difficult matter.

There is another point in Mr. South's papers which should not pass unnoticed. He states (Entom. 125) that, so far as Great Britain is concerned, *L. icarus*, coming from North-west Europe at a time when our islands were united with the Continent, came first into Scotland, extending thence through the Scottish Islands to Ireland, subsequently appearing in England *viâ* France. Is not this really the merest surmise? Can he adduce any proof whatever that Great Britain, in days when our lepidopterous fauna existed, was connected with North-

west Europe at a time when it was not connected with France? If it was then connected with France, was not that the more probable route of the advancing *icarus*, if, indeed, *icarus* ever did advance in that sort of way? If England was not then connected with France, what becomes of the blown-over theory? Why should not that be at least as likely as the early post-glacial Scandinavian invasion theory. Or does Mr. South contend that *icarus* was in North-west Europe, meaning I suppose Scandinavia, at a time when it was not in France?

Will Mr. South give us his reasons for these speculations? Surely to state in so *ex cathedra* a way that in the middle post-glacial epoch *L. bellargus* and *L. corydon* preceded *L. argiades* in its appearance in this country, and were themselves long preceded in the early post-glacial times by *L. icarus* and *L. ægon*; that *L. argiades* has always been with us, but that *L. batika*, appearing here under almost similar circumstances, is a recent acquisition; that some species first invaded Scotland, others England; is to claim an omniscience fortunately denied to mankind.

55, Lincoln's Inn Fields, Sept. 10, 1887.

THE LYCÆNIDÆ OF NORTH KENT.

By J. W. TUTT, F.E.S.

MR. SOUTH and I apparently hold very different views as to the relation between our three species (hitherto so-called) of the genus *Lycæna*, viz., *icarus*, *corydon*, and *bellargus* (Entom. 220). Granted that Mr. South does not consider his use of the terms "hybrid" and "mongrel" synonymous, I believe that those who look upon the three species as perfectly distinct do not perceive the difference. With a fairly good continental collection of Lycænidae, comprising all the species Mr. South mentions (Entom. 1—127) and many more for reference, I find that, although there is much in his remarks (Entom. 1—127) with which I am in perfect accord, his suggestion that the above-named species are not "pure species" does not commend itself to me; and I must add that I believe the differences between any two of these three species to be quite equal to that between the more closely allied European Argynnidae and Melitææ, and their distinct

development to be quite equal to that between our own *A. selene* and *A. euphrosyne*, especially that of *L. icarus*, with either *L. bellargus* or *L. corydon*. I believe the two latter are less highly specialised, or separate from each other, but still sufficiently so to answer all the general purposes and fulfil the special functions which species are supposed to possess *inter se*. If we are to accept Mr. South's view as correct and apply our connecting-links to an almost indefinite extent, I am afraid we shall have but few species; and as he himself has stated that *L. icarus*, *Polyommatus phlæas*, and *Thecla rubi* are descended probably from a common ancestor, why should we not, proceeding on the above lines, call the common ancestor a species, and treat all and each of its descendants as varieties or aberrations? Of course this is extreme, but it should be the result on general grounds. We must be very careful, when we find apparent connecting-links, how we do away with the specific claims of forms which are as highly specialised and distinct in themselves as they possibly can be, so far as we are able to judge.

Holding the view therefore that *corydon*, *bellargus*, and *icarus* are distinct as species,—and I believe this view is still held by a great majority of entomologists,—I consider that Mr. South's use of the term "mongrel" and my use of the term "hybrid" synonymous, both being used as the offspring of a union of what we generally consider distinct species. Mr. South's idea of "mongrelisation" in this matter corresponds exactly with my idea of "hybridisation." Mr. South may say that he has never stated they are not "species," but I maintain that if they are not "pure species" they are only aberrations, and not species at all.

I am sorry the paragraph (Entom. 208) was not more explicit. It referred in a general way to Mr. South's idea of "crossing," but it was directed almost entirely so as to bear on Mr. Sabine's statement (p. 181) that "most probably" his varieties "were hybrids, and if so unions between the two species must be a tolerably common event here." I should be sorry to lay to Mr. South's account the charge of believing in "wholesale hybridisation in nature," and I am pleased that Mr. South agrees with me in this matter, and considers that I am justified in characterising such "wholesale hybridisation" as "more than improbable." It adds a great deal to the value

of the position I have taken up when we consider that Mr. South decidedly believes these insects to be "not pure."

Mr. South says that I ignore the "blue-black form" of the male altogether. I did so purposely, because I did not care to discuss the matter, holding a different opinion to Mr. South with regard to it. I have never taken this form, and never remember having seen it; but I have carefully read Mr. South's description, and from this I should say it most probably is not a case of atavism or recurrence to a primitive type in a direct form, for the following reason: if *icarus*, as we both maintain, is the primitive form of this particular group, then the blue-black form could not very well be a recurrent form. Typical male *icarus* are a paler blue than *bellargus*, and hence, while I hold that the pale varieties are decided cases of atavism, I believe the blue-black form to be only a sport, or rather a case of the male having a tendency to partake of the coloration of the female.

Mr. Sabine (Entom. 222) throws doubt on my statement as I had not seen his specimens; but Mr. South's descriptions are exceedingly good. Many entomologists must have read these descriptions and understand our argument without having seen Mr. Sabine's insects. I have taken the form occasionally for years; sixteen years ago (1871) I took my first. At the South London Nat. Hist. Society's Meeting on Thursday, August 25th, Mr. Sabine exhibited his specimens when I was present. His pale form is identical with the form I wrote about, and with the specimens I still have in my cabinet (labelled June, '75). There can be no doubt now on that score.

I am perfectly aware that *icarus* flies with *bellargus*, and I have to offer an apology to the readers of the 'Entomologist' for the statement under question. It was the result of dealing with two distinct matters at one time. I had Mr. Sabine's statement (p. 182) "that unions between *corydon* and *bellargus* have been most decidedly possible, and any number of them, too," running in my mind; hence the unfortunate error.

This year has, as Mr. Sabine says, been an exceptional year. I was collecting on the chalk-hills near Cuxton on August 15th, and saw many *corydon* (worn), but no *bellargus*; but on the 19th six male *corydon* (worn), five females in much better condition, and just two dozen freshly-emerged male *bellargus*, but no

females. On Sept. 3rd *bellargus* in plenty, but not a single *corydon*. This year is, of course, abnormal. Owing to the late spring *corydon* larvæ were being collected at the time the imago should appear, but the pupal stage was short. Mr. Sabine's notes and mine differ only in degree. He suggested the occurrence together of the two species as normal; I found it abnormal.

With regard to the concluding sentences of Mr. Sabine's note, he does not seem to have read my note (Entom. 174) carefully, as he makes one or two misleading statements in referring to it. (1), I was not at Cuxton on June 6th. (2), I did not state that *bellargus* was not out there on June 6th; it may have been, I was not there to see. (3), I was at Cuxton on June 4th, and was probably a day or two too soon. With regard to my reference to June 22nd, I gave it as a late date, and more nearly approximating to the earliest possible appearance of *L. corydon*.

I would suggest that if arguments on such matters as the subject before us are to be of the least scientific value, the collector who suggests or supports a theory, or proposes a question, should give the readers of the 'Entomologist' sufficient information and data as to peculiarities of flora, geological structure, and general environment to sift the matter out, and to aid them to form a correct opinion.

Rayleigh Villa, Westcombe Park, S.E.

[Apology is due to Mr. Tutt for considerable reduction in length of his article, which very fully replied to the remarks on the subject which appeared in our last number; but in our discretion we have condensed his reply.—ED.]

NOTES ON *LOBOPHORA VIRETATA*.

BY THE REV. CHAS. F. THORNEWILL.

ON June 2nd last I visited Sutton Park in search of *Lobophora viretata*, and found the insects in abundance sitting on the trunks of the hollies, preferring the darkest and most sheltered places. They were by no means easy to take, frequently flying off before I could box them; but in all I took sixty-six specimens,

and of these sixteen were females, which are easily distinguished from the opposite sex by the absence of the "lobe" on the hinder wings.

I placed five of these females in a well-ventilated box with some sprays of holly in blossom, hoping that they would lay, killing and setting the remainder. On inspecting my setting-boards a day or two afterwards I found four eggs, laid by as many specimens of the females, on the boards. I transferred these to a glass-topped box, in which they hatched on June 10th, one young larva being pale yellow, with a black and very distinctly bifid head. I supplied my larvæ with flowers of the holly and mountain-ash, the latter being also fairly abundant at Sutton, and likewise with leaves of privet; but I found that the flowers of the holly alone were eaten, and upon these the little larvæ thrived amazingly. Meanwhile my five females in the box were all dead, and, on examining the holly-leaves and flowers closely with a magnifying-glass, I failed to detect a single egg. However, I transferred the flowers, which by this time were withered, to the box which contained the other larvæ, and in a few days two more larvæ made their appearance, a welcome addition, as one of my original five had somehow been lost. The holly-flowers were now all withered, but, upon the substitution of young berries, the larvæ took to them at once, gnawing into the berry close to the insertion of the stalk, and greedily devouring the interior.

The larvæ now began to assume a greener tinge, and in addition to this three out of the six were marked down the back with chocolate blotches, which varied in size and intensity of colour in the different specimens, reminding one closely in this respect of the larva of *Asthena blomeri*. They appeared to feed almost exclusively at night, resting in the day-time in a curved position upon the stalks of the holly-berries, to which they were attached by the claspers only, the fore part of the body being raised. I noticed also that they had spun a number of fine silken threads around the spray on which they fed, to which the pellets of frass were plentifully attached; and from this I can fully understand what my friend Mr. Bath has informed me, viz., that although he has several times beaten the hollies at Sutton for this larva, he has never yet succeeded in obtaining it.

My larvæ fed up rapidly, and on June 28th I found the two

largest at the bottom of the box, evidently on the eve of pupation. I transferred them to a chip-box, half filled with earth, upon the surface of which I had scattered a few bits of thin paper; and in this box they changed to pupæ, making a flimsy cocoon of silk and fragments of earth, roofed in with paper.

I had previously given the finest of my larvæ to Mr. G. Baker, of Burton-on-Trent, by whom it was preserved for the collection of my friend Dr. Mason. The other larvæ pupated in course of time, and I am now (Sept. 1st) waiting to see whether they will emerge this month, or remain in pupa till next spring.

I find, on consulting the 'Entomologist's Monthly Magazine,' vol. xiii. p. 185, that the late Mr. Buckler has written an admirable account of the larval state of this insect, which I hope will eventually be embodied in one of the Ray Society's volumes. I observe, however, that Mr. Buckler says:—"I find nothing to show that it has more than one brood in the year, or more than one food-plant, *viz.*, privet, for the larva." Both these statements must obviously now be modified.

The Soho, Burton-on-Trent, September, 1887.

THE HESSIAN FLY.

BY ELEANOR A. ORMEROD, F.E.S.

REPORTS from correspondents acquainted with the attack of the Hessian fly show its presence now in an almost continuous line along the northern and eastern coast from Cromarty on the Moray Firth in Scotland down to Kent.

The most northerly locality from which I have at present received specimens of puparia is from the parish of Urquhart, in Morayshire. Further north than this I am not aware of it having reached, and on the 10th inst. information was sent me by Mr. George Brown, of Watten Mains, Caithness, a well practised entomological observer, that he had "been on the outlook, but had never come across anything bearing the slightest resemblance to attack from these pests;" and, so far as he could learn, Caithness was as yet free from a visitation of them.

The amount of presence varies very much. In the locality above mentioned (that is, the district from Aberdeen to Cromarty),

the traces of attack are reported as to be found from twenty-five to thirty miles inland, but the injury slight, not more than one straw in fifty being affected, and the grain of fair quality. It is severe in some parts of Perthshire, and is found also in the eastern counties adjacent.

In East Lothian, Haddington, and Berwickshire attack is only reported from a few places at present, and in Northumberland from one locality.

Beginning again on the two sides of the Humber, the attack widens much in area as it is traced south. It passes through Lincolnshire and Cambridgeshire, touching an easterly part of Northamptonshire, till it extends over the district commonly known as the eastern counties, including besides great attack in Hertfordshire, and some in Bedfordshire; and it also occurs in Kent.

In the southerly or westerly parts of England it occurs at Lymington and Petersfield in Hampshire, and to a considerable extent near the College of Agriculture, Downton, near Salisbury; and I have one report of it from near Bridgwater, and it also occurs at Goring Heath, Oxfordshire.

The above localities are where I know of its presence from specimens sent to myself, or, in a few cases, from information given me by correspondents whom I know to be acquainted with the appearance of the puparium, and the characteristics of the attack. It very likely may occur elsewhere, but I am only just giving a general sketch of extent of infested area from personal knowledge. It strikes me as a very curious point that the attack should so markedly cling to the sea-side, excepting in a few isolated instances, or where the inland area is continuous with the sea-side district.

It is very satisfactory to observe that although the season has been so altogether extraordinarily favourable to various kinds of insects affecting corn-stems, yet that in very many instances reported to me the injury caused to wheat by Hessian fly has been slight. On this fact I venture to think we may ground a hope that, either from the varieties of wheat which we use being kinds suited to do what is called "resist" attack, or from circumstances of our cultivation, we may find that our wheat at least does not suffer as much as in some other countries; and I venture to take the opportunity of suggesting to your readers that I should feel

greatly obliged by being favoured with the names of any varieties of wheat which may have been known with certainty to have been infested by *Cecidomyia destructor*, and yet not to have been seriously injured.

Also the enormous prevalence of the two stem attacks caused respectively by the corn sawfly, *Cephus pygmæus*, and by the dipterous fly, the *Chlorops tæniopus*,—attacks which far exceed in amount any which have been brought under my notice as caused by these insects,—give a hope that the climatal circumstances which usually prevail here will have an effect in checking the attack of the *Cecidomyia destructor*, as well as the above-named crop pests, as we see that all three kinds have been exceptionally thriving in the heat and drought, exceptional here.

Whilst I write, information has arrived from Prof. F. M. Webster, of Lafayette, Ind., U.S.A., that the much more severe extent of drought there has (up to date) checked appearance of the pest, and the record which is being taken of climatal effect will be of much use.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

EXTRAORDINARY ABUNDANCE OF *PIERIS RAPÆ*.—One noticeable feature of the present season certainly has been the superabundance of *Pieris rapæ*. In the larval condition these have been a source of great annoyance, both to the gardener and agriculturist. One day early in the present month of August, a friend of mine, whilst seated on the downs near Broadwater, a village close to Worthing, happening to look up at the moment, saw the air filled with what he at first took for thistle-down, but which proved to be a large cloud of white butterflies (*Pieris rapæ*), of which there were scores upon scores. They have also been seen settled in this neighbourhood upon various plants in such numbers that handfuls might have been easily collected in a few seconds. It is somewhat remarkable that in the *Colias edusa* year of 1877,—of which, by the way, I have not seen a specimen this year,—when the fields and gardens were teeming with this favourite but capriciously-appearing butterfly, it would have been difficult, at least so far as my own experience goes, to have taken a dozen whites of either species throughout the day.—JOSEPH ANDERSON, Jun.; Chichester, August, 1887.

ABUNDANCE OF PIERIDÆ.—The swarms of white butterflies have been phenomenal in this neighbourhood and in the clover fields; nearly every flower-head has been conspicuous by its rifling *Pieris*.—WINDSOR HAMBROUGH; Hamilton House, Odiham, Hants, September, 1887.

APATURA IRIS IN MAY IN DEVONSHIRE.—On a very hot day, about the 11th of May last, on the top of a high hill close here, and flying rapidly under some tall trees, I caught a male *Apatura iris*, apparently just emerged from the pupa. As this is neither the season nor a recorded locality for this butterfly, I am rather at a loss to account for its appearance, and shall be very much obliged if you can suggest any explanation of it.—F. G. JOHNSON; The Old House, Blundell's School, Tiverton, Devon.

LYCÆNA CORYDON AWAY FROM CHALK.—Adverting to my friend Dr. Rendall's note on this species (Entom. 229), respecting his having taken it at Hounslow on 1st August last, a locality many miles from a chalk formation, so far as my experience goes I have never found *Lycæna corydon* in England except on chalk; but on the Continent the species is by no means confined to a chalky soil; for instance, I have taken it near Aussig in Bohemia amongst the darkest trap-rocks, and in the Alps in the Rhone Valley between Viesch and Brieg, in parts in which I saw no chalk. I have even taken specimens at Zermatt, some 5000 feet above the level of the sea. The Bohemian specimens are larger and darker than the English, the outer third of the fore wings being more suffused with black.—J. JENNER WEIR; Beckenham, Kent.

LYCÆNA CORYDON AWAY FROM CHALK.—An entomologist, in the August number of this magazine, having recorded the capture of *Lycæna corydon* away from chalk soil, I may state that I took a single specimen of this insect in Herefordshire, about twelve miles due north of Worcester, in the middle of August this year. There is no chalk whatever in the neighbourhood; and so far as I can ascertain, *L. corydon* has not previously been observed there.—JOHN LEA; 2, Elm Villas, Hampstead, N.W., September, 1887.

LYCÆNA CORYDON, DWARF SPECIMENS.—While collecting with a friend on the chalk downs, between Lewes and Glynde, we met with a great profusion of both male and female specimens of this butterfly of unusually dwarfed size. Most of the specimens were

less in size than *Lycæna icarus*. They appeared confined to a small spot just by the rifle-butts; for although we saw hundreds on the downs outside this particular spot, they were all of the normal size. Can anyone explain this phenomenon?—A. W. GUSH; Mayfield, Hollington Park, St. Leonard's-on-Sea.

LYCÆNA CORYDON, VARIETIES.—It is more than twenty years since I have had the opportunity of working for *Lycæna corydon* inland, and I was much pleased when my brother, Mr. T. H. Briggs, on the 2nd August, came across the species in the utmost profusion at an inland locality in one of the metropolitan counties. I am thus vague, as it seems now to be the fashion to conceal one's localities for common species. Amongst those he took was a most singular variety of the under side, the fore wings being grey, nicely streaked; hind wings of the obsolete type, with the usual orange ocelli elongated, blind, and tawny. On August 4th my eldest nephew took a very similar variety, and we secured a fine series of dwarf specimens and some partially obsolete varieties. On August 23rd, at the same place, I took a gynandromorphous specimen, and my youngest nephew the finest obsolete variety I have ever seen, which, through a violation of one or two of the commandments, is now in my cabinet. On Sept. 8th they were going over, but many were in brilliant condition, just out. *Lycæna bellargus*, *L. astrarche*, and *L. medon* were flying merrily with them, but without any attempt at illicit intercourse, so far as we observed, thus confirming all my previous experience. I think, in face of the records in the 'Entomologist,' that Mr. South should now tell us who are the entomologists of much experience who maintain (Entom. 81) that *L. corydon* has run its course before the second brood of *L. bellargus* appears, so that we may know in what part of England their experience was obtained.—C. A. BRIGGS; 55, Lincoln's Inn Fields, Sept. 13.

LONDON LEPIDOPTERA.—Mr. Percy Rendall's interesting notes on Lepidoptera in London (Entom. 198) induced me to note the varieties of Diurni observed in a London garden during August of this year. While reading on a garden-seat in a plot of ground belonging to one of the houses in Highbury Place, I observed personally—*Vanessa io* (several), *V. urticæ* (several), *Lycæna icarus* (several), *Polymmatas phlæas* (one only), *Pararge megæra* (one only), *Pieris brassicæ* (swarms), *P. rapæ* (very plentiful, but

not so many as *P. brassicæ*), *Macroglossa stellatarum* (two, over a jasmine), *Orgyia antiqua* (swarms). Curiously, no *Vanessa atalanta* have been observed this year, though they have frequented the spot in September for two or three years previously, about three specimens being seen each season. Larvæ of *Smerinthus populi* are plentiful on a poplar tree in the garden; and one larva of *Dicranura vinula* has been found. Of all the flowers in the garden, the jasmine proved the most attractive to insects of all kinds.—HAROLD HODGE; 9, Highbury Place, N.

ADDITIONAL NOTES ON THE DIURNI OF LULWORTH COVE.—

On Wednesday, August 16th, 1887, I revisited Lulworth Cove for the purpose of again examining the Lepidoptera of the district. My previous visit was some six days earlier in the corresponding month of last year (Entom. 183). I was fortunate in obtaining a more favourable day on this occasion than on my previous visit, but the wind was far too strong. I first followed along the cliff in the direction of Weymouth, and soon found *Satyrus semele* in great abundance. I afterwards examined a steep chalky hill-side a little further inland, to which I was unable to give any attention last year, and found it inhabited by large numbers of *Lycæna corydon*. Last year I only obtained one specimen of *Satyrus semele* from here; but on this occasion they proved so extremely common that I could have taken large numbers, had I been so inclined. This species is reported by Kirby as "varying according to locality." Some of my own specimens vary as follows:—The spots on the upper side of the front wing on some specimens are considerably larger than those on others; the spot or eye on the anal corner of the hind wing is absent (nearly), whilst the spots on the front wing are unusually big; in others there is no white in the centre of the eyes; the shades of colouring in the female specimens differ very materially. I saw, as on my previous visit, only two specimens of *Melanarge galatea*, so I am inclined to consider them very scarce here. I am not aware of any other records of the occurrence of this insect around the neighbourhood. A pair of *Epinephele ianira*, taken here, exhibit a peculiarly strong olive-green tint, which I have not observed before. On my last visit (1886) I only obtained one specimen of *Lycæna corydon*, but this year I found them abundantly, as mentioned above. I have again

compared my specimens with those delineated on Plates I. and II. of this volume, attached to Mr. South's valuable paper on *Lycænæ*, and find as follows:—The males bear a strong resemblance on the upper surface to Plate I., fig. 9; the under surface is very varied, but mostly resemble the specimen shown on Plate I., fig. 5, but sometimes the spots on the fore wing are scarcely discernible, and in other specimens the spots on the margin of the front wing have no crescent. Females:—Upper surface like Plate I., fig. 11; under side similar to Plate I., fig. 8; but in more than one specimen there is no black speck in the centre of the discoidal spot, it being perfectly white. All my specimens of *Lycæna corydon* were about the average size, except one exceptionally fine male. The varieties of *L. corydon* are so numerous, nearly every district where it occurs having some variety of its own, that it would seem desirable that collectors should compare their specimens with Mr. South's paper, and where necessary note and record any fresh variety they may be fortunate enough to possess. After having thoroughly examined the Weymouth side of Lulworth, I took the opposite direction leading to the coast-guard station. After a careful search I found *Hesperia actæon* in fair numbers on a sheltered spot of some thirty square yards about a mile along the coast, and took some two or three specimens. The local reports as to whether this species is on the increase or decrease vary considerably; some collectors saying it is getting scarce, while others, again, maintain they have not perceptibly diminished. I am inclined to think they have just managed to hold their own; but I am certain of this, that if such wholesale and wanton destruction of this local insect continues in the future as it has in the past, then, at no distant date, we shall have another blank in the already small list of British butterflies. Since my last notes were written, I have heard of a gentleman who professed to having in his collection some scores of this local insect. Surely the Selborne Society, the intention of which is to preserve from unnecessary destruction such objects, might well establish a branch in Lulworth before it is too late.—W. G. McMURTRIE; Radstock, September 3, 1887.

A SUNNY CORNER.—Everyone who has paid attention to the habits of insects must have noticed the manner in which they will select and cling to some favoured little spot, although to grosser mortal perceptions it has few or no advantages over near

neighbouring places. An instance of this has just come under my notice, and I have had the pleasure, which was quite new to me, of watching no less than twenty-three of our sixty-four species of British butterflies at play at the same time in a corner of one field,—a spectacle equalling in brilliancy anything I have seen in the tropics. It was a sunny angle of a Dartmoor trout stream. On one hand were endless woods of beech and oak, and on the other the gorse and heather of great “tors” mounting up to the blue sky. Shut in thus from every wind all the butterflies of the district seemed to have accumulated in this entomological Arcadia. The great bunches of the purple loose-strife were haunted by the vivid yellow males of *Gonepteryx rhamni* with their pale milk-and-saffron mates. On the thistle-heads *Vanessa io* and *V. urticæ* sunned themselves in brilliant groups; while metallic *Lycenidæ* met in playful rivalry on the patches of the dwarf crowfoot. To swell the list there were all three varieties of the commoner white butterflies; and here and there in the lanes between the alder bushes that choice and dainty little insect the *Leucophasia sinapis* flitted to and fro. *Epinephele ianira* was ubiquitous. Other *Satyridæ*, including *Satyrus semele*, *Pararge egeria* and *P. megæra*, *Epinephele tithonus* and *E. hyperanthes* thronged the path-sides; while on the marshy patches both the species of *Cænonympha* were more or less common. Of insects of more consideration there were two kinds of *Nymphalidæ*,—*Argynnis aglaia* and *A. paphia*; the latter was everywhere,—ragged, for the most part, as if with the brunt of a long hot season, yet lively and striking,—sailing on its tawny wings in and out of the bramble thickets and over the fern clumps in rare abundance; but no doubt the most interesting to a “collector” in this congregation were of the genus *Thecla*. Of these the *Thecla betulæ* were sufficiently numerous on the oak-sprays along the sunny hanger-sides; but *T. quercus* were present in hundreds, dancing round the tall ash bushes in half dozens, the silver-grey of their under wings matching wonderfully, when at rest, the pale gloss of the leaves amongst which they lived. These, with an occasional *Melanargia galatea* and many *Lycæna bellargus*, made a sight to gladden the eye of any lover of these charming little beings, and one which I think worth putting on record.—LESTER ARNOLD; Bedford Park, Chiswick.

CLIMATIC EXPERIMENT ON PUPÆ OF LEPIDOPTERA.—Some time ago I forwarded the Rev. A. B. Watson, of Edinburgh, who was about to sail for India, some pupæ, with a request that he would kindly furnish me with dates of emergence in latitudes warmer than our own. Writing from the Staff Lines, Karachi, on the 15th of August, 1887, he says:—"I sailed from Liverpool on the 26th February, 1887, and, until we got into the Mediterranean, the weather was cold. Although the days there were bright and sunny, we had nothing which could be called heat until we entered the Suez Canal on the 14th March. There, at mid-day, the temperature in the shade was 82°. On the 17th March one *Pieris rapæ* made its appearance, a second on the 19th, a third on the 20th, and the fourth on the 21st. On the 21st the first *Pieris brassicæ* came out, another on the 22nd, and a third on the 23rd; on which day *Phalera bucephala* came out, followed by two more on the 24th. On the 26th March the first *Euchelia jacobæ* emerged. On the 27th March I landed at Bombay, and the next day I had a *P. brassicæ* out, which I turned loose to enjoy the sunshine of a warmer clime than its own. On the 29th I found two *E. jacobæ* in the box, and they also got their liberty, with another which put in an appearance on the 31st. On the 1st April I sailed from Bombay for Karachi, which I reached on the 3rd. On the 5th April the fifth *P. brassicæ* was out. On the 7th April both the pupæ of *Deilephila euphorbiæ* changed; and the same day the sixth *P. brassicæ* came out, a cripple, and one *E. jacobæ*, also a cripple. This is my record. I think that I have been fairly successful. The greatest disappointment is that *Smerinthus ocellatus* has failed altogether. I looked at the three pupæ the other day, and found them dried up, not a particle of dust even inside them when they were opened. The two *D. euphorbiæ* were fine specimens; but, unfortunately, when they were being dried on the boards, the little red ants got at them and ate up the body of one. We have had very little rain as yet, and the season has been most unfavourable for Lepidoptera. I took three or four specimens of a big *Sphinx* (almost the same as *Acherontia atropos*), and kept them for a long time hoping for eggs, but without success. I took, the other day, two fairly good specimens of *Deilephila livornica*, and I am in hopes of getting larvæ of the Sphingidæ soon. On the 15th of last August one (my first) was brought,

but I do not know what he is. In some years *Charocampa nerii* is tolerably common, and *C. celerio* also, but I have not been lucky enough to get them. If we had a good fall of rain it would bring lots of them out. But this part of India, Sind, is not nearly so rich in its butterflies and moths as Bombay is. The country round about is desert, and there are no wooded hills which insects love." The following is a list of the pupæ I sent Mr. Watson:—Three *S. ocellatus*, two *D. euphorbiæ* (not British), eight *E. jacobææ*, four *P. bucephala*, six *P. brassicæ*, and four *P. rapæ*. They were placed in a box on moss, with a light layer of the same material upon them. This upper layer was kept in a slightly damp condition.—J. ARKLE; 2, George Street, Chester, September, 1887.

CURIOUS HABIT OF MACROGLOSSA STELLATARUM.—In the course of a suburban ramble that I took on July 16th, about 4 p.m., I noticed a specimen of this insect, apparently dozing in the broad sunshine on the tarred side of a cow-shed. Thinking that I had an easy prey before me, I approached it cautiously with a large glass-topped box; but I soon became aware, by the position of his antennæ, that he was playing with me, for off he sailed a moment later. I had barely bemoaned my ill-fortune in appropriate terms, when to my surprise he returned, and settled within a few feet of his former position. Desirous not to miss him, I opened battle with a net, and, thinking that so lively an insect would certainly fly straight away, struck straight at the spot where he was. The result was that he allowed me to cover him, but before I could closely adjust the ring of my net to the boards he had slyly gone out sideways, and thereby received a second life at my hands, amid shouts of derisive laughter from my companion. My astonishment was redoubled to see him within a few minutes again "located" on the warm black boards. This time, thoroughly on my mettle, I swept sideways for him, and captured him as he flew, on the return stroke, a victim to his rash idiosyncrasy. I have been told by several entomologists, and others, in different counties, that the above insect has been much more plentiful, in their various neighbourhoods, than usual, this dry summer.—PERCY RENDALL; 16, Little Grosvenor Street, W., September 1, 1887.

MACROGLOSSA STELLATARUM IN DUMFRIESSHIRE.—On the 17th July, my friend Mr. Scott, of Whinneyknowe, Moffat, brought me

a specimen of this moth, which had flown in through his drawing-room window the previous night. I do not remember seeing the species recorded from that county before.—FRANK R. JEX LONG; 11, Doune Terrace, Kelvinside, Glasgow.

ABUNDANCE OF *SESIA TIPULIFORMIS* AT CHESTER.—Whilst in the garden of a friend examining some red currant bushes that had been defoliated by the larvæ of *Abraxas grossulariata*, I discovered a number of empty pupa-cases of *Sesia tipuliformis*. They were sticking from holes made in branches of various ages. Next morning, the 25th of June last, from 10.30 to about 12 o'clock, I took two dozen of the perfect insects, some at rest and others on the wing. They were nearly all confined to a row of red currant bushes stretching east and west, and fully exposed to the glare of the sun. Some ivy climbing upon the south wall of an outhouse was also much frequented by the little moths, which sported about in considerable numbers both upon the leaves and in the air above. An adjacent row of red currants stretching north and south was little frequented by them, whilst another of black currant trees seemed entirely ignored. One insect I captured on a pink,—the only flower that *tipuliformis* seemed to care about. At the end of a week the pretty little insects had all disappeared.—J. ARKLE; 2, George Street, Chester.

SPHINX CONVOLVULI.—This moth appears to have occurred more frequently this autumn than usual. The following are records received:—

Cumberland. — At 11 a.m., Sept. 6th, I took *S. convolvuli* sitting on the front of the house. I heard of some workmen close by taking another the day before.—M. ROUTLEDGE; Stone House, Carlisle. On the 31st September a gentleman gave me a specimen of this moth, which he found at rest on the roof of an outhouse.—C. EALES; Cavendish Place, Carlisle.

Yorkshire. — Three males and two females near York on August 27th, 29th, Sept. 4th, 5th, and 7th, four being taken in a greenhouse, evidently attracted by the powerful odour of three tobacco plants (*Nicotina affinis*); the fifth I took from the sail of a barge lying in the River Foss. — ROBERT DUTTON; Castle Mills Bridge, York.

Lancashire. — At Bury, on Sept. 2nd, a female specimen was caught by a boy, flying in a public thoroughfare of this town.—

J. HOWARD HALL; Derby House, Bury. Two specimens near Bolton, one on the doorstep of Astley Bridge Church by the vicar, on August 31st; the other near Horwich, on Sept 4th.—**CHAS. E. STOTT**; Lostock, Bolton.

Warwickshire.—Two fine specimens have lately been captured in Birmingham. I have myself caught one of the handsome larva of this moth at Sparkbrook, Birmingham.—**W. T. RAINE**; 43, Newport Road, Sparkbrook, Birmingham.

Worcestershire.—I have been successful in taking fourteen specimens flying round the flowers of *Nicotina affinis*. The first was caught August 27th, the remainder at intervals up till September 9th. — **WILLIAM H. EDWARDS**; 21 Pitmaston Road, Worcester.

Cambridgeshire.—Two specimens were taken near Cambridge, one in a house in Mill Road on August 19th, and another early in September on the Newmarket Road by a boy.—**ALBERT H. WATERS**; Willoughby House, Mill Road, Cambridge.

Buckinghamshire.—A fine specimen was taken in a cleft of a tree in Chalfont Park, on August 20th, and brought to me.—**J. SEYMOUR ST. JOHN**; Chalfont St. Peter, Slough.

Suffolk.—I caught, on September 2nd, at Lowestoft, a perfect specimen of *Sphinx convolvuli*.—**F. J. STONEMAN**; 43, St. John's Park, Highgate Hill.

Kent.—On Sept. 3rd a labouring man brought me a specimen of *S. convolvuli* in fair condition; I also saw one at rest on a gas-lamp on 7th inst., but was unable to effect a capture.—**W. H. CHEESMAN**; Rose Villa, Coolinge, Folkestone. A specimen exhibited alive at the South London Nat. Hist. Society's Meeting, Sept. 8th, by Mr. Trimmer Williams, was found on the window of his house, Sidcup, on the same day.—**JOHN T. CARRINGTON**.

Sussex.—Thirty-five specimens have been secured in my garden here, and in addition to these I have captured and released upwards of twenty specimens. I have also seen a great many others. I only obtained one variety, a female with a broad black bar just above the tail. They appeared the second week in August, and are still on the wing (September 21st).—**DOVER A. EDGELL**; Firle, near Lewes. On August 29th last a guard at the Groombridge Railway Station presented me with a large specimen. On the evening of Sept. 12th I captured another specimen at a petunia-bed in the garden, very perfect and

apparently just emerged from pupa.—W. H. BLABER; Beckworth, Lindfield. Three were taken at Keymer, but were all faded.—JOHN T. CARRINGTON.

Surrey.—A specimen was taken at Haslemere, August 31st.—T. P. NEWMAN; Springfield, Reigate. A specimen taken by Dr. W. McGeagh at Putney on the 31st August.—JOHN LEA; 2, Elm Villas, Hampstead.

Hampshire.—On Sept. 3rd a dead *S. convolvuli* was brought me by a gardener; so, thinking more might be about, I watched some petunia-beds at dusk on the 6th and 7th, and saw three on the first and another on the latter evening.—WALDEGRAVE; Blackmoor, Petersfield, Hants, Sept. 8th. A fine specimen was taken at Alum Bay, Isle of Wight, on August 30th.—M. A. GRANT. I began to keep a look-out for this species about the middle of August, thinking perhaps that the very dry season would have the same favourable result with *S. convolvuli* as in 1885, but not until the 27th did I see a specimen—a worn male; the next evening I captured a large female in better condition, and two more were brought me, the last on Sept. 12th—a fresh male specimen. I know of a great many taken not far from here about the time I captured my first two, nearly all in poor condition; this and their appearing all in the same week leads me to the belief that these *S. convolvuli* are immigrants.—J. M. ADYE; Somerford Grange, Christchurch.

CALLIMORPHA HERA IN SOUTH DEVON.—While recently staying at Tenby, I felt anxious to renew my acquaintance with my old friend *Callimorpha hera*. I therefore left South Wales for Dawlish on August 13th, and on my arrival began working in earnest. During my week's visit I had the pleasure of capturing six specimens, three of which were the var. *lutescens*. Two more were sent to me subsequently. Compared with last year, I found I was quite a week too late, as my specimens were not in perfect condition; but I was fortunate enough to obtain ova, which hatched in ten days, and I have now the larvæ feeding.—J. JAGER; 180, Kensington Park Road, Notting Hill, London, Sept. 18, 1887.

PUPATION OF COSSUS.—With reference to Mr. W. O. Hammond's remarks last month (Entom. 231), with respect to the pupation of *Cossus ligniperda*, I have invariably found the cocoon in the wood until the present year, when I discovered the pupa-case at a con-

siderable distance from the tree, just below the surface of the earth.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., September 12, 1887.

OCNERIA DISPAR, MALFORMATION NOT HEREDITARY.—From one dozen pupæ, obtained in August, 1886, I got five perfect insects, which I killed; the rest were badly crippled, especially the females. From these I obtained about forty-five eggs, which commenced hatching May 12th, 1887. The larvæ were fed on hawthorn and apple till July 9th, when they commenced spinning up. The moths began to emerge July 29th, and, with the exception of two which died in the pupæ, *all* were perfect specimens. They thus showed no hereditary malformation, though they were the offspring of crippled parents.—W. H. EDWARDS; 21, Pitmaston Road, Worcester, September 19, 1887.

NOTODONTA DICTÆOIDES DOUBLE-BROODED.—I took a fairly fresh specimen of this moth on a lamp at Hampstead, on 4th September last. Presumably it belonged to a second brood, as the insect appears to be on the wing in June and July.—JOHN LEA; 2, Elm Villas, Hampstead, September, 1887.

ACRONYCTA ALNI NEAR SCARBOROUGH. — A specimen of *Acronycta alni* was taken at rest on some palings near to Seamen Beacon, in the vicinity of Scarborough, by Mr. J. Head, on June 25th.—JAMES H. ROWNTREE; Westwood, Scarborough, September 17, 1887.

ACRONYCTA MEGACEPHALA DOUBLE-BROODED.—About the end of July this year I took a number of the larvæ of this species from the trunks of poplars in Hyde Park. They spun up a few days later, and on the 25th of August I was surprised to find, on looking into my breeding-cage, that one of the moths had emerged. A second specimen emerged on the 28th, and on the 29th I took a perfectly fresh specimen from a gas-lamp in Brixton Road. Newman, in his 'Natural History of British Moths,' makes no mention of a second brood, and gives June as the time of appearance. The remainder of the pupæ seem to have every intention of passing the winter in that state. This unusual emergence may be on account of the recent hot weather.—FRANK R. JEX LONG; 11, Doune Terrace, Kelvinside, Glasgow, September, 1887.

PLUSIA INTERROGATIONIS IN SOUTH WALES.—On the 4th July, while taking moths at light, I captured, among others, a fine specimen of *Plusia interrogationis*, which species I was not aware occurred in South Wales, though I believe it has been occasionally taken in North Wales, as also the more northern counties of England. This season an unusual quantity of *P. chrysitis* and *P. pulchrina* occurred, though not generally common here; also *P. festuæ*, which I have not before observed. I have taken all this season in some abundance over ragwort, borage, and hemlock flowers. *Plusia chrysitis* was in the utmost profusion.—S. GRAVES; 29, Victoria Street, Tenby, South Wales.

CIRRHÆDIA XERAMPELINA IN IRELAND.—Perhaps your readers may be interested to hear that on Wednesday last, 24th August, I took, as indicated in the article on autumnal collecting (Entom. 202), a fine fresh specimen of *Cirrhædia xerampelina* drying its wings on the trunk of an ash tree at 5.30 p.m., at Bessborough Park, Co. Kilkenny. I do not think it has been before noticed in this "Emerald Isle" of ours. This is an exceptionally good place all round for the pursuit of Entomology.—F. W. H. WALSHE; Carrick-on-Suir, Ireland, August 31, 1887.

CIRRHÆDIA XERAMPELINA AT WORCESTER.—I have taken thirteen specimens this season off the trunks of ash trees. They were all in good condition, having just emerged.—WILLIAM H. EDWARDS; 21, Pitmaston Road, Worcester.

CIRRHÆDIA XERAMPELINA IN SOUTH BUCKS.—My grateful thanks are given to Mr. Carrington for his valuable and timely hints on "Collecting Autumnal Lepidoptera" in the August number of the 'Entomologist,' as well as for some pleasant and profitable hours from them. Wishing to discover *C. xerampelina* here, if possible, I searched the ash trees in Chalfont Park three or four afternoons last month without success until the 27th, on which day I saw with pleasure a fine fellow drying his wings at 5.15. On further search I took five others; and since then, with the kind help of a friend, the captures have been as follows:—August 29th, twelve; the 30th, three; September 2nd, six; the 3rd, one; the 5th, one; but saw no more after that. On the last-named day I found a perfect specimen of *Xanthia citrago* on the grass within eighteen inches of an ash trunk, and which at the first glance I took to be a *xerampelina*. How it got

there I know not, the larva feeding only on lime. The majority of the twenty-nine taken were found within two feet of the ground on the ash trunks, but some (and I noticed especially on windy days) on the grass within eighteen inches of the trunks. The variety *unicolor* was not among them. If *xerampelina* is looked for in the way indicated by Mr. Carrington, it will become, I venture to think, as common as *Xanthia fulvago* or *X. flavago*.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, Sept. 12.

CIRRHÆDIA XERAMPELINA IN GLOUCESTERSHIRE.—As an old collector in Gloucestershire of *Cirrhædia xerampelina*, I read with interest your note on collecting that species (Entom. 202). I have taken here forty-three this year, and I have no doubt I might have taken any quantity if I had devoted time to it. I once, in Gloucestershire, dug twenty-four pupæ at one tree, and then found several imagines on the same tree. I have often wondered if *Dasycampa rubiginea* could be found in the same way. There are many oaks here, and I mean to look this year. I was some years ago in Devonshire, and dug seventeen pupæ of *D. rubiginea* at one tree. *Hadena protea* may be found in quantity in the same way as *C. xerampelina*, and also *Polia chi*. I find the *C. xerampelina* earlier in the day than you mention, from 11 to 3 p.m.—E. HALLETT TODD; Stretton-en-le-Field, Ashby-de-la-Zouch, September 10, 1887.

ON XANTHIA FULVAGO VAR. FLAVESCENS.—I have somewhere seen written, and often heard stated, that the var. *flavescens* of *Xanthia fulvago* is much more frequently bred from larvæ found feeding in the catkins of osier (*Salix viminalis*) than in those from the common species of that genus (*S. caprea* and *S. cinerea*), and to account for this the theory is advanced that this form being uniform yellow in colour approaches much nearer in tint the autumnal leaves of *S. viminalis* than typical specimens, and thus being better concealed from its enemies by the process of natural selection is gradually becoming itself the type of the local races, the larvæ of which feed upon this plant. Now this is all very beautiful in theory, and if a fact is a most interesting and instructive one; but it seems doubtful (as far as the experience I have been able to gather shows) whether it will bear examination. It may be remarked that *Xanthia fulvago* is a very widely distributed and also a strong flying species, and as several varieties of

sallows are universally common it is probable that a race occurring in a locality where the osier grows would not confine itself solely to this plant, but would feed in a large number of generations upon other species of the same family. Now as natural selection is an extremely slow process it would probably require a great number of generations on one line of descent of osier-fed specimens to produce a marked departure from the original type, and as a large number of individuals of this line in each generation would undoubtedly wander to and from this food-plant, the tendency to favourable variation acquired in one generation would be neutralised in the next, and so on. Some seven or eight years I have bred this species from willow catkins gathered in various localities; the average number of specimens has been, say, five dozen per annum, and of the variety (excepting one season) about two per cent. of the total number. On several of the above occasions my catkins were gathered from Breadsall Moor, near Derby, and from these alone did *flavescens* emerge. In the spring of 1885 I collected about a pint of catkins, and bred from them fifty-three specimens, of which no less than eighteen were this variety. These came from the same bush off which I had several times previously taken catkins, with first-mentioned result. I have often asked entomologists who have bred this species from osier-fed specimens if they have been more successful than myself in procuring this variety, but have not met with anyone who has. From the above observations it would appear that *Xanthia fulvago* var. *flavescens* is a local form and to a very large extent hereditary, for only on the assumption that the parent moth which deposited the ova on catkins collected in 1885 was this form can one account for the large number of it emerging that year.—W. G. SHELDON; Rose Cottage, Oval Road, Addiscombe, August 13, 1887.

ABRAXAS GROSSULARIATA, VAR.—During May I collected two or three hundred larvæ of *A. grossulariata*, and bred a most peculiar variety with no white in it at all, but where the white is in the ordinary specimens, is yellow, like the usual transverse band. I see no account of such a variety in Newman's work, so thought it might interest your readers.—R. B. ROBERTSON; New Lodge, Hartley Wintney, Winchfield, Hants, August 29, 1887.

CLEORA ANGULARIA IN HANTS.—I had the good fortune to meet with a specimen of *Cleora angularia* (*viduaria*) in the New

Forest on June 24th. It is a male, and in fine condition.—
EDWARD BUCKELL; Romsey.

MACARIA LITURATA, VARIETY. — I have taken, at Delamere Forest, what I believe to be a good variety of *Macaria liturata*. The following is a rough description of the insect :—All the wings are dark smoky brown, almost black, with a broad distinct band of dull ochre; hind margin of all the wings decidedly darker than the rest of the wing; there are no costal markings, or the slightest trace of them.—ROBT. NEWSTEAD; Curator, Grosvenor Museum, Chester, July 10, 1887.

PERIDEA TREPIDA.—In answer to R. S. Williment's question concerning the fecundity of this insect (Entom. 159), I may say I took a male and female on the bole of an oak in a wood near Colchester on May 21st, 1880. The female laid fully 300 ova. In the following year, on the 25th of May, in the same wood, I took at rest on another oak-trunk a much worn male, which I placed in a cage with a newly-emerged female from the progeny of the pair taken in 1880. This female also laid fully 300 ova. But this year, from a bred pairing, I was only enabled to obtain 225 ova, which diminution in number may be accounted for by declining vigour in the race consequent on the parents having been inbred of the second generation. Probably in a state of nature 300 would about represent the maximum number of ova laid by the female of this species. — GEO. J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W.

RETINIA PINICOLANA IN THE ENGADINE.—On Saturday, 6th August, I entered Pontresina by the Bernina Road, and was at once struck by the singular appearance of the pine trees. For many miles, as far as the eye could reach, the firs, instead of presenting their usual cool green aspect, were completely brown and withered from root to top. Thinking that this was unusual, and putting it down to the severity of the late winter, I made enquiries as to the cause of the catastrophe, for it was nothing less. I was given to understand that the dead-looking appearance of the trees was due to the ravages of the larva of a minute moth, which, upon investigation, turned out to be *Retinia pinicolana*. This was corroborated by an interesting account of insect pests, which I found in a little book, by Dr. Ludwig, about Pontresina and the environs. He states that the valley has been subject in like manner to visitations from the same insect, and that in 1868

and 1876—I quote from memory, and may therefore be wrong as to the actual years—the same thing took place. Sunday, 21st, August, dawned with a heavy snowstorm, and on a walk to the Morterasc glacier I found hundreds of the imagines lying frozen upon snow. As many of the trees never recover, the inhabitants are naturally anxious to find a remedy; but so far their efforts have been unavailing. I travelled over the Albula pass with a German naturalist, who informed me that the same insect had been making sad havoc among the pine trees on the beautiful Riffel Alp, at Zermatt; but these are the only localities I have heard of in Switzerland where the damage done amounts to anything serious. I never saw *Parnassius apollo* in such abundance or in such magnificent condition as this year. In the Tyrol it simply swarmed. I saw one very pretty variety, in which the ruby spots on the hind wings were united by a delicately-pencilled black line. This had been taken at Bergun by Mr. Sigdtmund, a naturalist resident there.—H. ROWLAND BROWN; Oxhey Grove, Stanmore, Middlesex, Sept. 2, 1887.

LONDON LEPIDOPTERA.—I was glad to see that some remarks and conjectures I had ventured to make were approved and confirmed by Mr. C. J. Biggs and Prof. R. Meldola (Entom. 234, 235), entomologists who are better qualified than I am for such a discussion. With respect to the latter's note, I may mention that whilst my remarks were in the press, I noticed *Lycæna icarus* in Ladbroke Square, though in previous years it had not been observed; *Cosmia trapezina*, also, has since been added to my list. I can also add my testimony to the fact that *Hyponomeuta padellus* was more plentiful than usual this year. There is already in my possession a respectable nucleus of London Tineæ, though up to the present time I have refrained from entering into particulars, hoping to augment the number of species. As regards Mr. Biggs's interesting note on the marked diminution of insects generally in the metropolitan district, I have lately obtained a list of captures made thirty years ago by a friend of mine, whilst residing in the north of London, which includes many, now, scarce species. Since it appears that a considerable amount of public interest is now being evinced in the matter, and that no one is engaged in drawing up a list of the London insects, I am encouraged to devote myself to the task, with a view to publication in the 'Entomologist,' especially as I am assured by the Editor

that I may safely count upon a number of competent helpers, which would prevent the responsibility from being too onerous. The task is surely one possessing scientific interest, that would become enhanced as time rolls on; sources of information are passing away from us day by day. The largest city in the world has a right to expect that its fauna should be accurately chronicled by the energy of its citizens, so that entomologists of the future may have data to which to refer, showing clearly what insects had been able to boast:—"Civis Romanus sum." The limit I propose to make is that of the outer cab radius, which is clearly indicated on most maps of the metropolis, *i.e.*, six miles from Charing Cross, the centre; and I should be glad to receive any properly authenticated records of captures of Lepidoptera, with dates, within this area, if correspondents would be good enough to forward the same to me, at the address given.—PERCY RENDALL, M.D.; 16, Little Grosvenor Street, W., Sept., 1887.

LEPIDOPTERA IN SOUTH WALES.—About the middle of August I spent some time in South Wales, at Tenby, and was successful in taking some good Noctuæ. In one night I took a long series of *Stilbia anomala*, *Agrotis ripæ*, *A. vestigialis*, *A. obelisca*, *A. præcox*, and others. *Agrotis lucerneæ* was also common, but very much worn. Sugar proved a failure this year, which I regretted, as *Polia xanthomista* var. *nigrocincta* and *Triphæna orbona* (*subsequa*) had been taken in the same locality two years ago. I may mention that the second brood of *Lycæna argiolus* occurred in South Wales and Devonshire in greater numbers than I had previously observed.—J. JAGER; 180, Kensington Park Road, Notting Hill, London, W., September 18, 1887.

LEPIDOPTERA NEAR ELY.—The months of May and June seemed to be singularly fused this year, and it was impossible to conjecture in the middle of June what would be the result of any day's captures. It was lamentable to see how small and backward the larvæ generally were in the month of June; and with the drought staring us in the face, the result will not be favourable for the season of 1888. In proof of the above remarks, I give the result of two days' experience this year, on the 10th and 17th of June. On the former day, in two hours and a half I secured thirty *Bankia argentula* and saw *Hydrelia uncula*, and several *Euclidia mi*, *E. glyphica*, *Phytometra viridaria*, *Bapta temerata*, *B. bimaculata*, and *Strenia clathrata*. I saw *Melitæa aurinia*, but

unfortunately missed my solitary chance at it. I secured two larvæ, full-fed, of the beautiful *Plusia chryson*. On the 17th of June I was most fortunate in four hours and a half securing from two to ten specimens of the following:—*Euchloë cardamines*, *Argynnis euphrosyne*, *Pararge egeria*, *P. megæra*, *Cænonympha pamphilus*, *Thecla rubi*, *Nemeobius lucina*, *Syrichthus malvæ*, *Nisoniades tages*, *Hesperia comma*, *H. sylvanus*, *Carterocephalus palæmon*, *Macroglossa fuciformis*, *Ino statices* (in abundance), *Nemeophila plantaginis*, *Euclidia mi*, *E. glyphica*, *Heliaca tenebrata*, *Cabera pusaria*, *Asthena sylvata*, and single specimens of *Larentia* and *Eupithecia*. I may mention that all the above were fresh. It was very hot work, but I felt rewarded by the extreme variety of my captures.—HAROLD ARCHER; "The Close," Ely.

NEW FOREST NOTES.—On the 18th of July I took up my quarters at Brockenhurst for ten days' collecting. The weather was everything that could be desired, from an entomological point of view, which probably in a great measure accounted for the results comparing very favourably with those of the past two or three seasons. The Diurni were out in great force. *Argynnis paphia* and *Limenitis sibylla* were everywhere abundant. I have never seen either species so plentiful before. *Gonepteryx rhamni* and *Thecla quercus* occurred commonly, and a long series of *Vanessa polychloros* was taken. This species usually occurs very sparingly. The abundance of *Pieris rapæ* was particularly noticeable; it apparently almost displaced *P. napi*, of which I only observed one specimen. *Apatura iris*, although rather local, was not at all uncommon, and I had much pleasure in taking this grand insect for the first time. Five specimens only were netted, not without considerable patience and a good many disappointments. I was particularly struck with their partiality for the spruce-firs. Very few were noticed flying round the oaks. On one day in particular I saw quite twenty specimens sailing along by these firs, and frequently alighting upon the cones, which had been moistened by a fine rain in the morning. The cones were evidently very attractive, for nothing but the appearance of a female would bring his imperial majesty within reach of an ordinary net. By trunk searching a nice series of *Liparis monacha* was taken (including some handsome dark forms); also *Nola confusalis* and *Boarmia repandata* (var. *conservaria*). Sugaring was at first very disappointing, but later on *Amphipyra*

pyramidea occurred in great profusion, from sixteen to twenty specimens being frequently observed upon a single tree. On the other hand, such common species as *Xylophasia monoglypha*, *Noctua xanthographa*, *Tryphæna pronuba*, and *Cosmia trapezina* only appeared very sparingly; also *Gonophora derasa*, *Leucania turca* (worn), *Aplecta prasina*, *A. nebulosa*, *Catocala promissa*, and *C. sponsa* (one only), but later on it was taken in large numbers. I did not find the heaths very productive. An expedition after *Acidalia straminata* and *Selidosema ericetaria* was unsuccessful, but *Satyrus semele*, *Lycæna ægon*, *Pseudoterpna pruinata*, and *Agrotis strigula* were plentiful. Very few Geometers put in an appearance at dusk. Among those taken were *Epione apiciaria*, *Ellopiæ prosapiaria*, *Pericallia syringaria*, *Crocallis elinguaris*, *Ennomos angularia*, *Cleora lichenaria*, *Gnophos obscuraria*, *Phorodesma pustulata*, *Ligdia adustata*, *Melanthia albicillata*, *Coremia designata*, *Scotosia dubitata*, *Cidaria picata*. Among the larvæ thrashed out were *Selenia tetralunaria*, *Ennomos tiliaria*, *E. angularia*, *Amphydasis strataria*, *Deprana lacertinaria*, *Stauropus fagi* (very small), *Notodonta dromedarius*, *N. chaonia*, *N. trimacula*, *Cymatophora ridens* (a few, mostly ichneumonid), *Acronycta tridens*, and *A. leporina*. I understand that *C. ridens* had been unusually abundant. On the whole I think the present season, in the New Forest especially, has been a great improvement upon any since that of 1881, which, if I remember rightly, followed a long and severe winter, such as the last experienced.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Sept. 12, 1887.

MOTHS SETTling ON WATER.—In the 'Entomologist' (p. 225), Mr. H. G. Sheldon notices the fact that he has found Lepidoptera capable of rising from the surface of the water on the salt-marshes of Shoeburyness. Perhaps it may be of interest to relate that while watching the lake of St. Moritz I was surprised to notice the movements of a certain Geometer, very common in the adjacent pine woods. It apparently took great pleasure in the water, and hundreds of them might be seen dipping like swallows upon the surface. Several, however, ventured yet farther, and lay with their wings extended almost on the water, but apparently found no difficulty in directing their flight upward when disturbed in their bath.—H. ROWLAND BROWN; Oxhey Grove, Stanmore, Middlesex, September 2, 1887.

LARVA RAPIDLY CHANGING COLOUR.—I wish to ask whether it is known that a lepidopterous larva can change its colour rapidly. I was walking in our garden here to-day in company of my wife, and detected a larva (that of a *Noctua*) busily engaged in devouring the flower of a marigold. I picked off the flower, the larva being attached, and showed it to my wife, the larva being then a dull brown. In the course of two or three seconds it became evidently to us both a decided blue, and, before I had reached the house with it, again became brown. I do not know the species of larva, but it is in the breeding-cage still at work on the marigold, and remains brown. The swarms of “whites” here have been phenomenal, and in the clover fields nearly every flower-head has been conspicuous by its rifling *Pieris*.—WINDSOR HAMBROUGH; Hamilton House, Odiham, Hants, Sept., 1887.

PRESERVATION OF NEUROPTERA.—In the ‘Entomologist’ (p. 115) the Rev. Dr. Walker asked if any of your readers could inform him how to preserve the colours of Neuroptera, but I have seen no reply, and by what I read and hear there is no way known by which the splendid colours of these insects can be preserved. Though I am not confident of having overcome the difficulty, yet I venture to say the following will be found to be of some use:—Cut open the ventral side of the abdomen *and thorax* with a small pair of scissors, and extract the contents immediately the insect is dead; then drop into the cavity some drops of benzine, or, as my bottle is labelled, “benzole rectified,” and shake in some carbonate of magnesia to absorb the spirit and grease; a few minutes afterwards the magnesia can be removed by blowing, and brushing with a camel’s-hair brush; the quicker and more thoroughly the contents are removed the better, after the insect is dead. With this post I send you a male and female of a species of dragonfly, *Cordulegaster annulatus*, thus treated, that you might see the result. They have been done nearly two months. The smaller species of Neuroptera require careful handling, but with a little practice that difficulty will be overcome. The best way, or rather the way I kill them, is by dropping two drops of chloroform on the under side of the thorax of the large dragonflies, which kills them instantly; and one drop is sufficient for the Demoiselle (*Calepteryx splendens*), which fortunately does not fade nor shrink. An hour or two should elapse before they are set, as the chloroform makes them stiff for a bit. You will see

that I have stuffed them by laying in stems of dry grass, by which means they can be very quickly done. I was led to try this plan by having a dragonfly sent me last year with the abdomen, by some means or other, empty, and the colours not much faded.—F. MILTON; 164, Stamford Hill, N., September 15, 1887.

[Our correspondent favoured us with an examination of the specimens to which he refers, and we may say that their preservation seems decidedly in advance of anything we have seen.—ED.]

SIREX GIGAS IN NORTH WALES.—A fine specimen of this handsome sawfly was taken recently at Nantyn Hall, near Llangollen, by Colonel Webb, of Lyncroft, Lichfield.—JOHN T. CARRINGTON; September, 1887.

CORDULEGASTER ANNULATUS, &C., IN WYRE FOREST.—I visited Wyre Forest on several occasions during July, and met with *Cordulegaster annulatus* in the neighbourhood of Derule's Brook, of which insects I have taken a grand series altogether. At Earl's Wood, in June last, I saw *Agrion minima* in immense abundance; and at Stratford-on-Avon, in July, I was able to collect a nice series of *Agrion pumilio*. Very little is recorded about dragonflies; so I thought that these few notes might be interesting to collectors of these insects.—W. HARCOURT BATH; Ladywood, Birmingham.

ICHNEUMONS AND THE HOT SUMMER.—With regard to the interesting point raised by Mr. McMurtrie (Entom. 228), as to the effect of the great heat on ichneumon flies, I regret to say that I have been forced to arrive at a very different conclusion from his, as I have never known larvæ so terribly subject to the attacks of ichneumons as in the late exceptionally hot and dry summer. It is only fair to state that my work has for the most part consisted in rearing Micro-Lepidoptera, but the disappointments I have had to bear have been endless; and larvæ, whether of single- or double-brooded species, seem to have suffered equally from the attacks of these pests. Looking back on my experience of this season, I am led to believe that the great heat and drought, while favourable to lepidopterous larvæ in general, have been especially favourable to the parasites which prey upon them. As regards the late extraordinary abundance of *Pieris brassicæ* and *P. rapæ*, if, as seems probable, their numbers are in a great measure to be accounted for by the immigration of large flights from the Continent, the phenomenon is easily explained;

whilst in the case of the second brood, it is surely not to be expected that our native stock of ichneumons would be able to cope with the hosts of larvæ resulting from such an exceptional visitation.—EUSTACE R. BANKES; The Rectory, Corfe Castle.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—Sept. 7, 1887. Dr. Sharp, President, in the Chair. Mr. Arthur Sidgwick, M.A., Fellow of Corpus Christi College, Oxford, of Woodstock Road, Oxford, was elected a Fellow of the Society. Mr. Jenner Weir exhibited a living larva of *Myrmeleon europæus*, which he had taken at Fontainebleau, on 6th August last. Mr. Elisha exhibited a series of bred specimens of both sexes of *Zelleria hepariella*, Stn.; and also, on behalf of Mr. C. S. Gregson, a series of eighty varieties of *Abraxas grossulariata*, selected from the specimens bred during the year 1886 from 4000 larvæ obtained from eggs laid by selected varieties, the results of crossing and interbreeding for more than twenty years. Mr. Stainton remarked that the female of *Zelleria hepariella* had until lately been considered a distinct species, and was known as *Z. insignipennella*, but directly Mr. Elisha began breeding the insect its identity with *Z. hepariella* was established. Mr. Tutt exhibited specimens of *Crambus alpinellus*, *C. contaminellus*, *Lita semidecandriella*, *L. marmorea* (dark forms), and *L. blandulella* (a new species), *Doryphora palustrella*, and *Depressaria yeatiana*, all collected at Deal during last July and August. Mr. Stainton observed that *Crambus alpinellus* was so named from the earliest captures of the species having been made on the lower parts of the Alps, but that it had since been found on the low sandy ground of North Germany; and its capture at Deal quite agreed with what was now known of the distribution of the species in Germany. It was first recorded as a British species by Dr. Knaggs in 1871, from two specimens taken at Southsea by Mr. Moncreaff. Mr. Stainton further observed that he had named Mr. Tutt's new species "*blandulella*" from its similarity to a small *maculea*, of which one of the best known synonyms was *blandella*. He also remarked that Deal was a new locality for *Doryphora palustrella*, which had hitherto only been recorded from Wicken Fen and the Norfolk Fens in England, and from the neighbourhood of Stettin on the Continent. Mr. Waterhouse exhibited, on

behalf of Mr. Coote, a variety of *Lycæna phlæas*; also a number of *Stenobothrus rufipes*, and three specimens of *Coccinella labilis*, recently taken by himself at Herne Bay. Mr. Martin Jacoby exhibited specimens of *Spilopyra sumptuosa*, Baly, and *Sybriacus magnificus*, Baly. He also exhibited several species of *Galerucideæ*, belonging to a genus which he proposed to call *Neobrotica*, closely resembling in shape and coloration certain species of *Diabrotica*, but differing therefrom in structural characters. He remarked that the late Baron Von Harold had described a *Galeruca* from Africa, which, except in generic characters, exactly resembled the South American genus *Dircema*. Dr. Sharp communicated a paper, by Mr. Thomas L. Casey, "On a new genus of African *Pselaphideæ*." Mr. Bridgman communicated a paper entitled "Further Additions to the Rev. T. A. Marshall's Catalogue of British *Ichneumonideæ*." Mr. Distant read a paper entitled "Contributions to a Knowledge of Oriental *Rhynchota*." Mr. Enock read notes "On the Parasites of the Hessian Fly," and exhibited specimens of injured barley. A discussion ensued, in which Dr. Sharp, Mr. Jacoby, Mr. Billups, Mr. Waterhouse, and others took part.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 25th, 1887. R. Adkin, F.E.S., President, in the chair. Mr. Cooper exhibited *Argyrolepidia æneana* from Essex. Mr. Mera, examples of the summer emergence of *Tephrosia crepuscularia*. Mr. West, *Acidalia ornata* (bred). Mr. Sheldon, *Catoptria candidulana*, *Retinia buoliana*, and *R. pinicolana*. Mr. Wellman, *Agrotis cursoria*, from Burton-on-Trent; *Noctua festiva*, var. *conflua*, from Perth; and *Plusia chryson*, from Newmarket. Mr. Dobson, *Psilura monacha*, *Selenia tetralunaria*, *Eugonia erosaria*, *Amphipyra pyramidea*, &c., bred from larvæ obtained at the New Forest. Mr. Barron, a large specimen of *Polyommatus phlæas*, with broad border to fore wings. Mr. Tugwell, *Boarmia abietaria*, bred from larvæ beaten out of yew. Mr. Tutt, a *Gelechia* of doubtful species; a short series each of *Depressaria yeatiana*, *Doryphora palustrella*, *Crambus contaminellus*, *C. alpinellus*, dark forms of *Lita marmorea*, and a new species *Lita blandulella*; also a blackish *Depressaria*, which Mr. Tutt stated could not be identified as belonging to any of our known British species. Mr. Sabine, *Lycæna icarus*, males of varying blue tints, blue females, and a dwarf male barely

three-fourths of an inch in span, under side with confluent spots, and an under side of male with left wings normal and right wings of the obsolete type; also males of *L. bellargus*, of various shades of colour, and females more or less blue; a fine series of hybrids (?), male and female, between *icarus* and *bellargus*; also forms and varieties of *L. corydon*. Mr. Billups read a letter from Mr. Cockerell, giving notes on the fauna of West Cliff, County Custer, Colorado, and exhibited specimens of Lepidoptera from that district.

September 8th.—T. R. Billups, F.E.S., in the chair.—Mr. J. T. Williams exhibited a small specimen of *Drepana binaria*, and remarked on the number of dwarfed specimens of Lepidoptera to be seen this year, which he attributed to the dryness of the atmosphere and consequent dryness of the food-plants. A discussion ensued, in which Messrs. Billups, Carrington, Wellman, and others took part. Mr. Williams also showed a specimen of *Sphinx convolvuli*, taken on his bedroom-window at Crayford, and asked whether the species deposited its eggs in the autumn or following spring. Mr. Carrington said he did not remember hearing of any hibernated specimens of the insect being taken in the spring, and would conclude from this that the ova were deposited in the autumn. Mr. Sheldon exhibited long series of *Agrotis agathina* and *Noctua castanea*, taken on heather-flower at Shirley. Dr. Rendall, *Apamea gemina* and *Hadena dissimilis*, and contributed notes. Mr. Wellman, varieties of *Zygæna filipendulæ*, from Dover. Mr. Dobson, *Emmelesia albulata*, Schiff., var. *thules*, Weir, and various Tortricæ from the Shetland Isles. Mr. E. Joy, two melanic varieties of *Vanessa urticæ*, bred from larvæ found at Folkestone. Mr. Tutt, varieties of *Agrotis tritici*, taken at Deal, 1887. Mr. Carrington exhibited pupæ of *Dicranura rinula*, formed among cotton-wool. Mr. Billups stated that several larvæ of this species had been found in the churchyard of St. Saviour's Church, Southwark. Mr. West (Greenwich), *Rhantus pulverosus*, *R. notatus*, the red variety of *Agabus bipustulatus*, and *Philonthus punctus*, all from Erith. Mr. Carrington, specimens of the Hessian Fly (*Cecidomyia destructor*), and a discussion took place as to the probability of this insect becoming permanently established in this country. Mr. Billups exhibited, on Mr. Cockerell's behalf, species from County Custer, Colorado, and contributed notes.—H. W. BARKER, Hon. Sec.

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[No. 294.]

ACIDALIA IMMORATA, L., A SPECIES NEW TO BRITAIN.



ACIDALIA IMMORATA, L.

ON June 27th last, Mr. C. H. Morris, of this town, showed me an insect, of which he had just caught two specimens on some heathy ground in this neighbourhood. When alive in the chip-box the insect somewhat resembled the female of *Fidonia atomaria*, to a form of which I hesitatingly referred it. Subsequent examination of the two specimens (which proved to be male and female) showed clearly that it was not that species, and that it was evidently new to the British List. I have recently, thanks to the assistance of Messrs. Waterhouse and Kirby, been enabled to compare the insect with types of *Acidalia immorata*, L., collected by Prof. Zeller, in the National Collection at South Kensington, with which it agrees in every respect.

Acidalia immorata, L., Syst. Nat. x. 528, is widely distributed on the Continent. Staudinger's List gives the following distribution:—

“Europe, Central and North—exclusive of the Polar Regions and England; Italy, Bulgaria, Russia, Bithynia, Siberia, east and north.”

It occurs in Holland according to Snellen, ‘*De Vlinders van Nederland*,’ p. 563; and Berce, in ‘*Faune Entomologique*

Francaise,' says it occurs in "Basses Alpes, Auvergne, Alsace, Bourgoyne—but not in environs of Paris."

Berce places it in the genus *Strenia*, with which its affinity is evident; but according to Standinger's arrangement it should stand in our lists close to *Acidalia emarginata*.

Its food-plant is *Calluna vulgaris*, and it was among this plant that the two specimens here mentioned were taken. It is probable that if places where *Calluna vulgaris* grows abundantly are well worked about the end of June or beginning of July the insect will be found in other localities.

J. H. A. JENNER.

4, East Street, Lewes, Oct. 11th, 1887.

NOTES ON THE NOTODONTIDÆ.

BY THE REV. BERNARD SMITH.

No. 3.—*STAUIROPUS FAGI*.

OBSERVING many discrepancies in the accounts of this singular insect, I wish to record the result of my own observations.

The moth emerges about the middle of June in our beech woods, but is rarely found. A female, however, taken into a wood and hung up in a cage of muslin will attract many males, between 11 p.m. and 1 a.m. on a warm night, showing that the insect is more plentiful than it seems. It was in this way that the black variety was discovered here.

The insect is, however, difficult to pair, and the second night after the female has emerged seems the only favourable one. In the woods the eggs are at first white, laid singly under a leaf of beech or oak, and may occasionally be found in shady spots. I have never found a second one on the same bush. The egg turns almost black before hatching, and the larva appears lobster-like from the first, or rather resembling an ant. It has not been observed to eat before its first moult.

Stauiropus fagi larvæ are found on oak, beech, hazel, and birch, and have even occurred on wild rose and hawthorn. It will also thrive well on apple. The larva is not often cannibal, though instances have occurred. It is certainly pugnacious, if kept in close quarters, and will not bear want of fresh air.

When full-fed, about September, it falls from its food, and

spins up between leaves, forming a tough cocoon, which should not be opened at least before June. There is no necessity to keep the cocoons out of doors, but a moderately damp atmosphere is desirable. Some cut the end of the cocoon open about the beginning of June, as the imago sometimes cannot get out readily, especially if the cocoons are too dry; if not cut, to expose the cocoons to a shower of rain early in June is a good practice. This moth usually emerges about 10 p.m., and should be reserved till the following evening to dry its wings thoroughly. It is then less liable to grease.

The larva is best found by search on small beech trees during September, and there is a dark variety, which, however, does not produce the black variety of the moth. This seems rather to belong to larvæ from hilly and late localities, such as Booker, about three miles to the north of Marlow. The progeny of the black variety is not notably darker.

This pupa does not lie over to a second season. The dark variety of this moth is, as a rule, smaller than the type.

This species occurs in all the woods about Marlow, in Bucks, Berks, and Oxon, and the larva is taken, though sparingly, every year, chiefly in September, by searching for it on the small branches of the beech, confining the search to the wood and not the leaves. When looking for the larva of *Limacodes asellus*, on the contrary, the searcher must look at the leaves, not the wood; so much so, that in looking for one you seldom find the other. The larva of *S. fagi* is also not unfrequently found on the hazel by boys when nutting.

"But are you *sure*," said I to a boy who brought me a fine larva of *S. fagi* from nut, "that the larva *ate* the leaves of the nut, or had it merely fallen from the beech above?" "Oh!" he replied, "it had eaten a *great hole* in the bush. That was how I found it."

Marlow, September 20, 1887.

THE LITA GROUP OF GELECHIIDÆ.

By JAMES W. TUTT, F.E.S.

In the 'Entomologist' (pp. 28—30) is published a note of mine, referring to the *Lita* group of the Gelechiidæ found on the

Deal sand-hills, together with an appeal for information. As I have since obtained a good deal of information about the group, it may be of value to some of our micro-lepidopterists if I attempt to explain what I have made out.

There seems little doubt that my note has brought this difficult group to the front, two new species having since been differentiated, and I have already mentioned incidentally (Entom. 213) that I am indebted to many of our leading lepidopterists for their kindness in helping me, both with specimens for reference and with information.

Referring to my previous paper, the form described as No. 1 (Entom. 29) has been decided by Mr. Stainton to be a new species, and this will be described in an early number of the Ent. Mo. Mag., under the name of *Gelechia* (*Lita*) *blandulella*. *Blandella* is a synonym of *maculea*; and as the species bears a close superficial resemblance to *maculea* but is very much smaller, the name *blandulella*—"the pigmy *blandella* (*maculea*)"—is very appropriate. No. 2 form (Entom. 29) must, so far as I at present can determine, be considered a variety of *blandulella*, with the black oblique line obsolete. This form is much like *knaggsiella* (which has the black line broken), but with the two species side by side one can readily see the difference.

I mentioned that No. 1a, an intermediate form, was named *knaggsiella* by Mr. Coverdale. I have since received specimens of the true *Lita knaggsiella*, bred by Herr Hoffmann, of Hanover, from *Stellaria holostea*, which he kindly gave me for comparison. These I compared with Mr. Stainton's magnificent series and some of the original British specimens, which Mr. C. G. Barrett kindly sent me. Although the specimens of *knaggsiella* that I inspected varied slightly *inter se*, the species has very distinct characters, and cannot easily be confounded, when once seen, with the allied species. My form No. 1a certainly is not *L. knaggsiella*, but consists of very pale specimens of *semidecandriella*, which has lately been differentiated by Mr. Threlfall. As specimens of *semidecandriella*, with perhaps a few *blandulella*, have been sent out from the S.E. coast for *knaggsiella*, the existing series of this latter species want overhauling, and there seems but little doubt that Mr. C. G. Barrett's few original specimens (Entom. 111) still stand unique as British. No. 3 was rightly called (Entom. 29) *semidecandriella*. This is the

typical form, but the specimens of this species vary in intensity both of colour and markings. About No. 4 I will say but little. The markings are so very indistinct that, after all the inspection I have given them, I am undecided. Mr. C. G. Barrett thinks the specimens are "dark vars. of *marmorea*." Probably he is correct.

The following summary may be of some use. It shows what are to me the salient points of these closely allied species. I class the species in pairs, which, in themselves, show but little difference except in size and different character of their respective localities:—

1. *L. maculea*.—Large, white, wood species.
L. blandulella.—Small, white, coast species.
(In both oblique black line whole).
2. *L. hubnerella*.—Large, white, grey-marbled species.
L. knaggsiella.—Small, white, grey-marbled, wood species.
(In both oblique black line broken).
3. *L. maculiferella*.—Inland, hedge species; food unknown.
L. semidecandriella.—Coast species; food *Cerastium semidecandrium*.
(Both dark species; oblique line whole).

This is only, of course, meant to be a very rough guide, but sometimes hints of this kind put one on the right track.

There is another species about which there is some uncertainty, I mean *Lita junctella*. This seems essentially a wood species. The original specimens came from Epping and Hainault Forests (*vide* Sta. Manual, vol. ii. p. 339). Messrs. Hodgkinson and Threlfall get specimens, referred to the species, on the coast of Lancashire. Their species hibernates; the only one of the group as yet known to do so. I asked both these gentlemen for the loan of specimens, but they get scarcely any; and although Mr. Hodgkinson could not let me have one, Mr. Threlfall kindly sent me a fine specimen, which I compared with Mr. Stainton's long series of British and Continental specimens. Mr. Stainton was as decided as myself that this specimen was not *junctella*. The original error must have arisen from the statement that a single specimen submitted to Mr. Stainton "might be *junctella*." I have specimens now, I believe, from Deal, quite indetical with Mr. Threlfall's coast species (hitherto called *junctella*); so that

probably this form is another coast species, apparently bearing the same relation to the wood species, *junctella*, that the new coast species, *blandulella*, does to the wood species, *maculea*. This is only thrown out as a suggestion for future investigation.

I may add that Mr. Nelson Richardson has sent me a lovely bred series of *Lita leucomellanella* from Weymouth. The white markings, upon which Mr. Stainton relies very much, are very variable, and in some almost obsolete. I believe this is the only genuine difference between *leucomellanella* and the closely-allied *vicinella*. I see, too, that many of our micro-lepidopterists bracket *vicinella* and *leucomellanella* together, thus suggesting that they are but one species, and that *vicinella* is an obscurely-marked form of *leucomellanella*. Is this the reason? If not, will one of them kindly tell us why they are thus bracketed?

Pale *semidecandriella* are not liable to be confounded with *marmorea*, if care be taken. The best point of distinction seems to be, that in *marmorea* the dark shade which takes up the costal part of the anterior wings is continuous to the thorax, while in *semidecandriella* it does not extend beyond the dark oblique line, the basal part being unicolorous grey.

The order in which our British species of this group are arranged does not seem altogether satisfactory. The new species *blandulella* is closely allied to *maculea* and *hubneri*, and *leucomellanella* seems rather out of place; but it seems difficult to determine with which species its affinities are greatest. I have adopted the following as being an apparently more natural arrangement in the species of this group:—*costella*, *fraternella*, *vicinella* (?), *leucomellanella*, *tricolorella*, *junctella*, *blandulella*, *maculea*, *hubneri*, *knaggsiella*, *maculiferella*, *semidecandriella*, *marmorea*. Of course it is open to objection, but less so it seems to me than the present arrangement.

Rayleigh Villa, Westcombe Park, September 19th, 1887.

LYCENIDÆ IN NORTH KENT.

BY RICHARD SOUTH, F.E.S.

REFERRING to my contention that *Lycæna icarus*, *L. bellargus*, and *L. corydon* are not pure species, Mr. Tutt (*ante*, p. 257) says, "I believe the differences between any two of these three species

to be quite equal to that between the more closely allied European Argynnidæ and Melitææ." In this I most decidedly agree with Mr. Tutt, but then I regard some of the groups in the genera *Melitæa* and *Argynnis* in exactly the same light as I do the particular group of Lycænæ considered in my recent notes.

Further on Mr. Tutt asks, Why should we not call the common ancestor of *Lycæna icarus*, *Polyommatus phleas* and *Thecla rubi* a species, and treat all and each of its descendants as varieties or aberrations? Well, perhaps we should not be very wide of the mark if we did so; but apart from the fact that the ancestral species is an unknown quantity, the interests of science demand that all the descendants shall be parcelled out and docketed as aberration of such and such a species,—species of this genus and genus of that family.

I cannot agree with Mr. Tutt that if an insect is not a pure species it must necessarily be considered an aberration. As regards classification, I contend that my use of the term "pure" in a comparative sense in no way affects the status of the insects under consideration. As species are usually determined I am open to admit that *icarus*, *bellargus* and *corydon* are more distinct from each other than are the members of certain groups of species in the *Tineina*. The difference of opinion between Mr. Tutt and myself lies principally in the value we attach to the term "species" as applied to the three insects in question. If Mr. Tutt considers these insects as pure species in the sense I have indicated (*ante*, p. 121), then he is certainly only consistent in calling the issue of a cross hybrids. I can, however, only suppose the insects to be as I have previously stated, not pure species, or, in other words, species which are but a step as it were above the stage known as a race. In fact, I cannot see any clear line of demarcation between such species as these and the domestic breeds of pigeons, sheep, and dogs. Some of the breeds of pigeons, for instance, have kept true for centuries, and compared one with the other are manifestly more distinct than is *icarus* from *bellargus*. We, however, know something definite of the common origin of the domestic races of birds and mammals, and so we term them "breeds"; but in the case of the butterflies under consideration, although we may reasonably suppose that they have all three descended from a common stock, yet we have no actual knowledge of this, and we therefore dub them "species."

In domestication, breeds may be said to be produced under artificial conditions, but at the same time in accordance with natural laws. Man employs, sometimes unwittingly, the very means adopted by Nature herself. That is, he selects the varieties best suited to his purpose to breed from, and when he has once got what he requires he is careful to keep the breed free from contamination, or, in other words, from crossing with any other variety. There is, perhaps, little to incite the several breeds to compete one with the other, as they are not dependent upon their own resources in procuring food, &c. Neither is there much inducement to rivalry on the part of the males or selection on that of the females, as their matrimonial affairs are usually arranged for them. If the several breeds of pigeons, sheep, and dogs had been produced under nature, the process of development would have been carried on at a very much slower rate than has been the case under domestication. A large number of the varieties would have been eliminated, or perhaps would not have been produced at all. Furthermore, in nature certain influences would have been at work, checking that free intercrossing which obtains so largely among the domestic breeds when not regulated by the breeder.

Returning to *icarus*, *bellargus* and *corydon*, and considering them as three races or tribes, I am inclined to think that the greatest bar to the free intercrossing of these insects in places where each is numerously represented, is the inherited predilection females of each tribe have for the males of their own tribe (*ante*, p. 124). Although these three insects possess certain external characters by which they may be specifically separated for the purposes of classification, I cannot suppose that there are important differences in their reproductive systems. If then a female of either tribe should by chance forsake the traditions of her sex in that tribe, and mate with a male of either of the other tribes, such crossing would, according to my view, result in mongrel offspring; that is the issue of what under domestication are termed breeds, but which in nature rank as species, though not pure species, as I have endeavoured to show.

Mr. Tutt has seriously misunderstood the tenor of my argument if he apprehends that I consider *icarus* to be the primitive form of the group of *Lycænæ* treated in my notes. I certainly have supposed *icarus* to be the dominant form of the

group, but relative to the ancestral form I wrote (*ante* p. 124), "I should suppose that both sexes of the original stock, from which several species of *Lycæna*, including those with which we are chiefly concerned, have descended, were dark brown or blackish on the upper surface," &c.

Of the species of *Lycæna* most intimately connected by community of descent I should instance *eumedon* or *astrarche* v. *artaxerxes* as examples retaining more or less of the original character of a common progenitor, but neither of these species directly belong to the particular group I have had under consideration.

I still maintain the blue-black form among Mr. Sabine's varieties to be an instance of reversion. If the "pale varieties" were "decided cases of atavism," as Mr. Tutt would seem to regard them, and if these varieties are as numerous as suggested, then atavism must obtain among *L. bellargus* to a very considerable extent in some parts of Kent. I cannot, however, give in my adherence to reversion on a large scale any more than to "wholesale hybridisation," as I do not consider there is any reason to suppose either one or the other probable. If the varieties in question are mongrels, as I believe them to be, the result of an occasional intercrossing would suffice to keep up the supply of these varieties. The offspring of a crossing between *carus* and *bellargus* would, according to my views, be fertile, and, whether pairing among themselves or with *icarus* or *bellargus*, the mongrel character would be reproduced, to a greater extent, perhaps, when the parents were both mongrels, and in a lesser degree when the pairing was between mongrel and *bellargus* or *icarus*.

October 7th, 1887.

A REPLY TO MR. BRIGGS.

BY RICHARD SOUTH, F.E.S.

THE critique by Mr. Charles A. Briggs (*ante* p. 353), on what he facetiously styles the "Mongrel-Hybrid Theory," is rendered nugatory by the writer's inordinate indulgence in unseemly banter.

Perhaps Mr. Briggs will hardly be surprised when I say that I think his comments on the opening remarks of my note (*ante*,

p. 1) from which he misquotes (*ante*, p. 254) are most ungenerous. I have nowhere stated that I had cognisance of, or that I even expected to be conversant with, the entire scheme of variation obtaining among such insects as *Lycæna icarus*, *L. bellargus* and *L. corydon*. Throughout my notes I especially referred to and dealt with the more constant varietal phases, and this fact must be patent to all who may have perused my observations in an impartial spirit.

Here is the entire passage from which Mr. Briggs has misquoted:—"My object, however, was not so much the acquisition of extraordinary forms as a desire to obtain a knowledge, as far as this was practicable, of the whole range in the variation of these species in particular South of England localities." If my ambition had been solely the acquisition of extreme forms, I probably could have obtained such examples through the same channels as do those collectors who spend years, and not a little cash, in amassing row after row of curious forms. I preferred, however, to examine numbers of the specimens in their native haunts, and select those which suited my purpose. In this way I maintain that I did ascertain, as far as it was possible for me to do, the whole range of variation in *Lycæna corydon* at Ventnor and Eastbourne.

I must also point out that by the substitution of the word "some" for "many" Mr. Briggs is misleading. Both words certainly express an indeterminate number, but "many" has greater numerical value than "some." I wrote (*ante* p. 1), "I have myself given *many* hours to the examination," &c.

I have perhaps given to this part of Mr. Briggs' paper more consideration than it really deserves, but I think I detect therein the true purpose of his contribution to the discussion on Mr. Sabine's varieties, &c.

As regards a common ancestry for *Polyommatus phlæas*, *Lycæna icarus*, and *Thecla rubi*, I am afraid that I cannot add much that would tend to render the suggestion less objectionable to Mr. Briggs. I do not know whether Mr. Briggs is a disciple of the special creation theory, but from his remarks (*ante*, p. 254) I cannot suppose that he favours evolution. Therefore, as I am distinctly an evolutionist, it is possible that we regard the matter in dispute from antagonistic standpoints. My return to the ancient biological creed is not probable, but if Mr. Briggs

has not yet seen reason in the theory of evolution, I hope his acceptance of the newer doctrine may not be "out of the range of practical politics."

Any one who will take the trouble to examine any large collection of Lycænidæ to which he may have access, and will also study the habits of the larvæ and the appearance and structure of ova, larvæ and pupæ of the genera *Polyommatus*, *Lycæna* and *Thecla*, should not, from an evolutionist's point of view, have any difficulty in admitting the probability of these being modified descendants of a common ancestor.

Mr. Briggs would seem to expect that I may be inclined to go further than simply suggesting community of descent for the trio adverted to. In this he only does me justice. I have but to contemplate the wonderful and beautifully wrought chain which links species with species, genus with genus, and family with family, to say that I am prepared to make a very much more sweeping assertion. Neither the present time nor place are, however, suitable for any such extended statement of my convictions touching the question of origin by descent.

Concerning *Lycæna argiades* I think that if Mr. Briggs will be good enough to again read my observations upon the occurrence of this insect in England, he will find that I have not put forward any dogmatical opinion. I admitted at the time that my view was necessarily speculative, and my mind is not now closed on the subject. If it can be shown that my conclusions were arrived at by a false process of reasoning, well and good; but I contend that the "ready-made theory," as Mr. Briggs somewhat unkindly terms my view of the matter, is not upset by a simple statement of dissent, even though it be accompanied by a suggestion that *L. argiades* cannot have been in this country for even so short a period as thirty years previous to the time of its capture. That the species does not appear to have been detected in any part of this country before the year 1874 (Entom. xviii. 292) is no proof that it did not exist here anterior to that date. I have admitted as possible both immigration and introduction by man's agency; but although I will not argue the point further here, I may say that I still incline to the opinion expressed (Entom. xix. 6). It may, however, interest Mr. Briggs to know that I am engaged on a work in which this and other matters of a kindred nature will be more

comprehensively dealt with than is possible in the pages of a magazine.

I have not directly replied to his other questions and objections; but Mr. Briggs will, I trust, pardon any seeming discourtesy. The fact is, he has dealt too much in sarcasm and too little in argument. It is really cruel of Mr. Briggs to expect one to divest his observations of the ridicule in which they are so closely enveloped, to ascertain the exact bearing of his queries or the amount and quality of the evidence he has to offer in support of his contentions.

October, 7th, 1887.

[With the following note this discussion is now closed.]

NOTE ON THE GENUS *LYCÆNA*.

BY J. JENNER WEIR, F.L.S., &c.

I HAVE taken no part in the heated controversy over this genus. The dispute appears to me to be one of words only. My own views may be thus briefly sketched:—No two insects are probably exactly alike. When a specimen exhibits a difference from the normal type, such as may perhaps never occur again or but rarely, this I take to be an aberration. Then there are varieties constantly recurring,—often local varieties which may be termed races; such varieties insensibly pass into subspecies, and these again into species. Some species may be closely allied, such as *L. icarus*, *L. bellargus*, and *L. corydon*; others less closely allied to these, as *L. ægon* or *L. astrarche*; others still more remotely allied, as *L. semiargus*, *L. minima*, and *L. argiolus*. *Bæticus*, often placed in the genus *Lycæna*, is the type of Latreille's genus *Polyommatus*, and is even more remotely allied to the species mentioned above.

I trust none will deem me dogmatic when I state that in my opinion, when three kinds of insects are found constantly existing in each other's company, without crossing as a rule, they are essentially species; between these there is apparently a "physiological" bar as Dr. Romanes has termed it, or *amixia* as it has been termed by Professor Meldola in his translation of Dr. Weismann's 'Studies in the Theory of Descent.'

I cannot expect that all the readers of the 'Entomologist'

will hold the same views as my own; but I do most earnestly hope that so long as I am in any way connected with it, all future dissertations which may appear in its pages will be carried on with courtesy, in that calm spirit which should distinguish all scientific discussions, and that all observations of a personal character may be avoided.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PARNASSIUS DELIUS IN WALES.—Your readers will be interested in hearing that a specimen of *Parnassius delius*, Esp. has been brought to me, captured by Mr. E. W. Schwartz, a pupil at the college, early in September last, near Bangor, North Wales. It was discovered settling on flowers, on a warm afternoon, and appeared somewhat sluggish in its movements. The specimen is much damaged, but of the species there can be no doubt. It seems to occur only in strictly Alpine localities, and can hardly therefore in any sense be regarded as British. Doubtless the specimen is an escape from the stock of some collector. But it would be interesting to know if its occurrence can be satisfactorily explained, and whether there is any other record of its appearance in Britain.—T. N. HART SMITH; Marlborough College, October 14.

DIURNI IN ARGYLESHPRE.—During a short sojourn in the above-named county, in the month of July of the present year, I observed that the specimens of *Vanessa urticae*, which were fairly common and in very fresh condition, were larger and more gorgeously coloured than those ordinarily seen in the neighbourhood of London. More than one variety also came under my notice, as two or three other entomologists were also staying in the district, and I remarked that some specimens on their setting-boards had more black on the lower wings than is usual with the ordinary type; and that in one case in particular the absence of black on the contrary, and the fiery character of the red were very conspicuous. I may add that Newman states, on p. 54 of his 'British Butterflies and Moths,' "Scottish examples are larger than English ones." Several specimens of *Epinephele ianira*, moreover, were of a particularly black type; while those of *Lycena icarus* were (as well as being larger in size than the

English type), in the case of the female, of a much more burnished or metallic appearance than the usual form. *Pieris napi* proved abundant on the peat-moss, and its green veining was singularly strongly marked. Other butterflies seen were as follows:—*P. brassicæ*, *Epinephele hyperanthes*, *Cænonympha pamphilus*, *Satyrus semele*, *Pararge ægeria*, *Polyommatus phlæas*. A specimen of *Vanessa polychloros*, in fine condition, was captured by Mr. John Mackay, of Glasgow, on July 20th, in South Knapdale, Argyleshire, on our return from the celebrated Kilmorie kirkyard, in the direction of Castle Sweyn, and at the distance of a mile or somewhat less from the former place. I take the opportunity of mentioning this capture, as on p. 57 of Newman's 'British Butterflies and Moths' the following statement occurs:—"This butterfly seems to be absent from Scotland and Ireland. In England its rarity in the north and extreme south-west is very noticeable: from Northumberland and Westmoreland I have no record of its occurrence; from Cumberland, Durham, and Lancashire, one specimen from each county; six Yorkshire localities are reported."—F. A. WALKER, D.D.; Dun Mallard, Cricklewood, N.W., August 8, 1887.

VANESSA C-ALBUM IN SUSSEX.—A specimen of this insect was taken in my garden here, towards the end of last September. I had never seen this insect in Sussex before.—DOVER A. EDGELL; Firle, Lewis, October 12, 1887.

HERMAPHRODITE LYCÆNA ICARUS.—I took a specimen of *L. icarus* with the male and female markings clearly represented on the opposite wings.—DOVER A. EDGELL; Firle, Lewis.

LYCÆNA BÆTICA IN FRANCE.—I took a perfectly fresh specimen of this insect on Sept. 7th inst., in a garden at Etretat, on the Normandy coast. Though I did not leave Etretat till more than a week later this was the only specimen I saw.—A. M. REID; Beckenham, Kent.

ACHERONTIA ATROPOS IN HAMPSHIRE.—On September 12th I had a fine female *Acherontia atropos* brought to me in perfect condition, which was said to have been found crawling over a bee-hive. It measured as nearly as possible five inches in expanse.—J. M. ADYE; Somerford Grange, Christchurch.

FOOD OF GNOPHRIA RUBRICOLLIS.—Will any one kindly inform me of a common food-plant for *G. rubricollis*? A good many

entomologists dispute its feeding on lichens at all. I gave the larvæ lettuce, which was eaten at first, but afterwards they would not touch it. I should also like to know if larvæ can be prevented from hybernating by being kept warm.—WALTER DANNATT; Ivy Dene, Westcombe Park, Blackheath, S.E., October, 1887.

SPHINX CONVULVULI.—In addition to the records of last month (Entom. 272), we have received the following:—

Scotland.—Two *Sphinx convolvuli* were found as far north as Cromarty, in the beginning of September; one was brought to me much damaged, which had been caught in a house; the other was captured on the sea-shore and brought to me alive and in good condition.—H. FRERE; 27, Newmark Hill, Wimbledon.

Yorkshire.—I had brought to me four *S. convolvuli* between the 28th of August and the 3rd of September. I then thought it time to look for them, and on the 5th of this month I netted three fine imagos, and one each on the following three evenings, all in good condition. Since then the evenings have been cold and stormy, and I have not seen any since the 8th, but intend to have another look if the evenings become warmer. I took one more on September 30th.—GEORGE ROSE; Barnsley. Two have been taken in the outskirts of Beverley, and two by lamp-lighters in the streets of Hull.—N. F. DOBREE; Beverley, E. Yorks, October 24, 1887.

Staffordshire.—*Sphinx convolvuli* has occurred this autumn in North Staffordshire. A specimen was brought to me in good condition, which had been found on a rail at Madeley railway-station, about 300 yards from this house. It is in good condition. This is the third specimen that, to my knowledge, has been taken in this parish. One in 1875; one last year; and the third, as I have just said, this year.—THOS. W. DALTRY; Madeley Vicarage, Newcastle, Staffs., Oct. 18, 1887.

Lincolnshire.—Three specimens of *S. convolvuli* have been taken in this town within this last month, and one specimen of *Acherontia atropos* was taken on the Royal Dock.—C. R. LOW; Kent Street, Grimsby, Sept. 24, 1887.

Suffolk.—I have obtained three *Sphinx convolvuli* this year; one I saw a man pick up out of the river; another a friend found on the pavement; and another my uncle's groom brought to me.—A. C. FREEMAN; 38, Foundation Street, Ipswich.

Essex.—It has been my good fortune this year to capture

fifty specimens of *Sphinx convolvuli* in my garden here, chiefly over *Nicotina affinis* which I had planted in large numbers to attract them, but some over petunia and pink geranium. Last year, at my old residence in Walthamstow, I captured nine specimens; the year before, seven; and in 1875 seven specimens, but none during the intervening period; so that after an interval of ten years, during which I failed to meet with a single specimen, I have taken this beautiful insect freely for three consecutive years. It was especially abundant this year, when it was not uncommon for a pair to be flying over the flowers at the same time.—SIDNEY COOPER; Hawkwood, Chingford, Oct. 10.

Sussex.—Three specimens of this moth were taken in this village during the first week of September, but all were worn and faded, as if they had been flying some time, thus confirming the view of your Windsor correspondent, that they have emerged earlier than usual.—E. BAYLEY; Keymer.

Hampshire.—In my notice in last month (Entom. 274, line 10) the words should be “and took three,” &c., not “saw.”—WALDEGRAVE; Bookham Lodge, Cobham, Surrey, Oct. 20, 1887.

Dorsetshire.—A female *Sphinx convolvuli* was brought to me early in September, crushed into a small flower-pot and nearly dead; three others have also been taken in this neighbourhood. O. P. CAMBRIDGE; Bloxworth, Oct. 5, 1885.

Middlesex.—I took *Sphinx convolvuli* in Acton hovering over a tobacco plant, to which it came and flew away several times in one evening in August.—WILLIAM WOODHAMS; 18, Shaa Road, Acton, W. A *Sphinx convolvuli* was brought to me by a young friend on September the 7th. With the exception of a very tattered specimen I found near Isleworth in 1878, this is the first I have seen in this neighbourhood. I had not met with this insect since I took three and saw others on the wing at Starcross, over pentstemon bloom, one moonlight night early in October, 1857; the next evening our cat caught one. Another was captured at light; this one was left under a finger-glass all night and laid a number of eggs: these hatched out shortly afterwards, but the larvæ died through a misadventure.—WILLIAM POWLEY; Hounslow, October 14, 1887.

ABUNDANCE OF SPHINX CONVULVULI IN FRANCE.—Referring to my note about *Sphinx convolvuli* in France (Entom. 230), I find I have recorded the capture of twenty-five only, but before

leaving Etretat my brother made the total to over forty; after that he refrained from catching more, though they came in swarms every evening to the same bed of petunias. I also took *Macroglossa stellatarum* this year, much more frequently than on any previous visit.—NIEL H. REID; Beckenham, Kent.

BOMBYX RUBI.—Will any one who has reared the larvæ of these insects successfully through the winter give me a few hints? I have tried several times, with very fine larvæ, but have never had a single imago. I have kept them in a wooden cage with a perforated zinc top, three or four inches of earth at the bottom, lightly covered with moss. Some winters this has stood in a room without a fire, others in an arbour sheltered from rain but exposed to cold and damp; the results have always been equally unsatisfactory. I have now about twenty larvæ, and should like to try and rear them. Should the moss be thicker, or damped occasionally? Once a few began to creep about in March, but did not touch the half-dead bramble leaves which were all I could find to give them. They are always shrivelled up to nothing, huddled together as if for warmth.—E. BAYLEY; Keymer, Sussex.

FOOD OF LOBOPHORA VIRETATA.—Mr. Bath has shown me the correspondence which has taken place in the 'Entomologist' in reference to the food-plant of *Lobophora viretata*. Several young larvæ of this insect were taken by myself, at Sutton Park, in the year 1883; they were feeding upon the young leaves or shoots of the holly (*Ilex aquifolium*), upon which I continued to feed them in confinement. I was successful in rearing about a dozen perfect insects. My brother, who used to collect insects, was with me at the time of taking the larvæ, and can vouch for the above.—ARTHUR PIMM; 107, Broad Street, Birmingham.

NOCTUA DEPUNCTA IN WILTSHIRE.—On the 23rd of July I took a good specimen of this rare insect at sugar in an open space of a wood near Marlborough. Not being quite sure of the insect's identity, I waited till I could ask the opinion of a more learned entomologist; hence the delay in making the communication.—M. KIMBER; Cope Hall, near Newbury.

ACRONYCTA ALNI FEEDING ON SALLOW.—I found a full-fed larva of *Acronycta alni* on willow here, which pupated in a bramble-stem.—C. A. SLADEN; Burghelere, Newbury, Oct., 1887.

MALFORMATION OF LEPIDOPTERA.—From larvæ of *Cidaria testata* found on heather, but which preferred sallow in confinement, most of the specimens which emerged wanted one or other hind wing, and one specimen both hind wings; otherwise they were perfectly developed, and fine and well-marked specimens. What was the cause of this? It certainly was not lack of food, or handling the pupæ.—C. H. SLADEN; Burghclere, Newbury, October 5, 1887.

CATOCALA FRAXINI IN HERTFORDSHIRE.—On Friday, Sept. 23rd, a specimen of *C. fraxini* was brought to me; it had been picked up on a path, under some ivy which had been trimmed in the course of the day. Unfortunately it has suffered from rough treatment.—R. W. BOWYER; Haileybury, Hertford, Sept. 25, 1887.

CATOCALA SPONSA IN KENT AND HANTS.—On September 1st, while sugaring in a wood near Blackheath, I took *C. sponsa*; it was on the sugar the same time as *C. nupta*. Although I sugared night after night, both before and after, I saw no more *sponsa*. I may mention I had just returned from the New Forest, where *C. sponsa* was swarming this year; *C. promissa* was common, but about one to ten *sponsa*. It was a sight to see *sponsa* flying high up round the oak trees long before the sun set. No sooner was the sugar on the trees, when there were at least four or five *sponsa* on each.—WILLIAM DANNATT; Ivy Dene, Westcombe Park, Blackheath, S.E., October, 1887.

CATEPHIA ALCHYMISTA.—It may be advisable to warn the readers of the 'Entomologist' that *Catephia alchymista* will probably be pretty abundant next year. A continental dealer has obtained the pupæ freely enough to offer at from 1s. 6d. to 3s. 6d. each to many of our British collectors. I should not have mentioned the fact, but I saw (Entom. 239) that one had been already captured on the south coast. Of course the capture may be genuine, but under the circumstances confirmation is certainly required. So far, I believe, there are only two British records—one specimen mentioned in Newman's 'British Moths,' the other captured by Mr. Davis, of Dover, and recorded Entom. xv. 162.—J. W. TURR; Blackheath, September 20, 1887.

NOTES FROM THE FOREST.—I am glad to be able to say that the *Catocaladæ* have at last been again abundant. During the

first part of August Mr. McRae, of Bournemouth, and I sugared and took large numbers of *C. sponsa* and *C. promissa*, and on one night only, at Brockenhurst (Aug. 8th), we managed to complete 100 specimens between us, and could have taken many more had we chosen; the larger portion were *C. promissa*, *Amphipyra pyramidea*, and *Calymnia trapezina*, being perfect pests, with an occasional *Cerigo matura* or two.—J. M. ADYE; Somerford Grange, Christchurch, September 22, 1887.

LARVÆ OF AGROTIS RIPÆ—CANNIBALS.—I have lately been keeping a large number of these larvæ, and on two occasions have seen them engaged in eating one another, even though well supplied with their proper food at the time. I do not recollect having read it anywhere. — S. GRAVES; 29, Victoria Street, Tenby, September 16, 1887.

INO STATICES AT CHINGFORD.—I was glad to find this season the pretty little *Ino statices* plentiful in one of my fields, and to be able to obtain a fresh series in the finest condition.—SIDNEY COOPER; Hawkwood, Chingford, October 1, 1887.

STRENIA CLATHRATA.—With reference to the Rev. J. Seymour St. John's query on the above species (Entom. 232), I may say that *Strenia clathrata* is always successively brooded in one sheltered locality in Kent. Whatever the atmospheric conditions, I rarely visit Chattenden Woods, near Gravesend, from May to the middle of August, without finding specimens in almost all stages of good, bad, and indifferent condition. The late specimens of one year, I should presume, produce the late specimens of the following year, although I dare say many of the produce of the earlier broods produce imagines the same year, as the insect is certainly sometimes more abundant at the beginning of August than in the middle of July. This seems rarely to happen on the more exposed hills, where the insect is common until the first week in July, and is then rarely seen.—J. W. TUTT; Blackheath.

MICRO-LEPIDOPTERA IN DORSETSHIRE.—Micro-Lepidoptera have been unusually abundant here, while Macros seem to have been comparatively very scarce; nor have we in this district had the abundance of the white cabbage butterflies noted in many other places. Among our best captures may be mentioned *Tinea arcella*, *T. nigripunctella*, *Xysmatodoma argentimaculella*, *Gracilaria elongella*, *Gelechia gemmella*, *Cleodora cytisella*, *Ela-*

chista serricornis, and *Pterophorus paludum*.—O. P. CAMBRIDGE ; Bloxworth, October 5, 1887.

SIREX JUVENCUS AT OLDHAM.—For the information of Mr. V. Gunther (Entom. 233), I may say that I have in my collection a pair of the above species, captured last July by my son, in one of our modern cotton mills.—J. T. RODGERS ; Oldham, Sept. 1887.

THE ABUNDANCE OF ICHNEUMONIDÆ IN 1887.—I can fully corroborate Mr. E. R. Bankes' experience (Entom. 285) as to the immense quantity of ichneumons which have appeared in our breeding-cages this summer instead of moths, as far as my own are concerned ; but the last sentence, referring specially to the phenomenal appearance of the Pieridæ this season, does not seem like being borne out here. Mr. Bankes says, "It is surely not to be expected that our native stock of ichneumons would be able to cope with the hosts of larvæ resulting from such an exceptional visitation." From this I suppose Mr. Bankes to mean that our normal numbers of Ichneumonidæ would not at once be able to cope with the progeny of the probably immigrating parents ; but how soon Ichneumonidæ adapt themselves to a changed order of things the following will show:—For the sake of amusement, I have tried to find out what probability there is of a numerous brood of *P. brassicæ* next spring. I collected about 200 larvæ of this species from a fence opposite Westcombe Park railway-station, taking only those that left the food-plant for the purpose of pupation, carefully looked after them, and as a result I have only three perfectly-formed pupæ and two crippled in the change, all the rest having produced the characteristic and well-known yellow *Microgaster* cocoons. Three out of quite 200 do not point to any special abundance next year, and if we come to consider the millions of extra Ichneumonidæ developed, owing to the extreme abundance of their hosts this autumn, the progeny of our early imagines will not have much chance, and look like having a very lively time of it if they are to survive at all. In the 'Substitute,' 1856—57, p. 41, I notice there is a communication very similar to the above, by Mr. C. G. Barrett. He says, "Last autumn (1855) the larvæ of *Pieris brassicæ* abounded in Shropshire to such an extent that the broccoli were almost destroyed, and the savoys and borecole completely reduced to skeletons, and even the turnips were

extensively attacked; it seemed as if the air would be filled with white butterflies this spring, but to my surprise they were nearly all ichneumonised; certainly not one-fifth, perhaps not one-tenth escaped, the walls, railings, and even trees, were studded with the little yellow or white bunches of *Ichneumon chrysalids*." I suppose by "they" Mr. Barrett meant the *autumnal* larvæ.—J. W. TUTT; Westcombe Park, S.E., October 6, 1887.

CALLIMORPHA HERA, &C.: CORRECTION.—An error has occurred (Entom. 274 and 281) which I should like to rectify. I did not stay at Tenby as stated, but at Saundersfoot, four miles from Tenby. I went from there on August 13th to South Devon, in search of *C. hera*, and did not take the Noctuæ mentioned until after my return to Saundersfoot on August 20th.—J. JAGER; 180, Kensington Park Road, Notting Hill, W., October 18, 1887.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—October 5, 1887. Dr. Sharp, President, in the chair. Mr. Jacoby exhibited a specimen of *Aphthonoides beccarii*, Jac., a species of *Haltica* having a long spine on the posterior femora. He also exhibited a specimen of *Rhagiosoma madagascariensis*, and remarked that it had the appearance of a Longicorn. Mr. Stevens exhibited a very dark specimen of *Crambus perlellus* from the Hebrides, which its captor supposed to be a new species. Mr. Porritt remarked that this brown form of *Crambus perlellus* occurred at Hartlepool with the ordinary typical form of the species, and was there regarded as only a variety of it. Mr. Slater exhibited a specimen of *Gonepteryx cleopatra*, which was stated to have been taken in the north of Scotland. Mr. Jenner Weir remarked that although the genus *Rhamnus*—to which the food-plant of the species belonged—was not a native of Scotland, some species had been introduced, and were cultivated in gardens. Mr. South exhibited an interesting series of about 150 specimens of *Boarmia repandata*, bred in 1876, and during the present year, from larvæ collected on bilberry in the neighbourhood of Lynmouth, North Devon. The series included strongly marked examples of the typical form, extreme forms of the var. *conversaria*, Hüb., a form intermediate between the type and the variety last named,

and examples of the var. *destrigaria*, Haw. Mr. South said that an examination of the entire series would show that the extreme forms were connected with the type by intermediate forms and their aberrations. Mr. Poulton exhibited young larvæ of *Apatura iris*, from the New Forest; also eight young larvæ of *Sphinx convolvuli* reared from ova laid on the 29th August last by a specimen captured by Mr. Pode in South Devon. Mr. Poulton said the life-history of the species was of extreme interest, throwing much light upon that of *Sphinx ligustri*, as well as upon difficult points in the ontogeny of the species of the allied genera *Acherontia* and *Smerinthus*. Mr. Stainton commented on the interesting nature of the exhibition, and said he was not aware that the larvæ of *Sphinx convolvuli* had ever before been seen in this country in their early stages. Mr. M'Lachlan remarked that females of this species captured on former occasions, when the insect had been unusually abundant, had been found upon dissection to have the ovaries aborted. Mr. R. W. Lloyd exhibited two specimens of *Elater pomonæ*, and one of *Mesosa nubila*, recently taken in the New Forest. Mr. Dannatt exhibited a specimen of the so-called "vegetable caterpillar" from New Zealand. Mr. Porritt exhibited a series of melanic varieties of *Diurnea fagella*, from Huddersfield, and stated that the typical pale form of the species had almost disappeared from that neighbourhood. Mr. Goss exhibited, for Mr. J. Brown, of Cambridge, a number of puparia of *Cecidomyia destructor* (Hessian Fly), received by the latter from various places in Cambridgeshire, Norfolk, Suffolk, and Wiltshire. He also exhibited a living larva of *Cephus pygmæus*, Lat. (the Corn Sawfly), which had been sent to Mr. Brown from Swaffham Prior, Cambridgeshire, where, as well as in Burwell Fen, it was stated to have been doing considerable damage to wheat crops. Mr. Verrall, in reply to a question by Mr. Enock, said he believed that the Hessian Fly was not a recent introduction in Great Britain, but had been here probably for a great number of years. In reply to a further question, he admitted that he was unable to refer to any but recent records of its capture. Prof. Riley said he was unable to agree with Mr. Verrall, and was of opinion that the Hessian Fly had been recently introduced into this country. Its presence here had not been recorded by Sir Joseph Banks, by Curtis (who paid great attention to farm

insects), by Prof. Westwood, by the late Mr. Kirby, or by any other entomologist in this country who had given especial attention to economic Entomology. Prof. Riley also said it seemed highly improbable, if this insect had been here so many years, that its presence should have so long remained undetected both by entomologists and agriculturists. It had been stated that the insect was introduced into America by the Hessian troops in 1777, but this was impossible, as its existence at that date was unknown in Hesse. Mr. McLachlan, Capt. Elwes, Mr. Verrall, Mr. Jacoby, and Dr. Sharp continued the discussion. Mr. James Edwards communicated the second and concluding part of his "Synopsis of British *Homoptera-Cicadina*." Prof. Westwood contributed "Notes on the Life-history of various species of the Neuropterous genus *Ascalaphus*." Capt. Elwes read a paper "On the Butterflies of the Pyrenees," and exhibited a large number of species which he had recently collected there. Mr. McLachlan said he spent some weeks in the Pyrenees in 1886, and was able to confirm Capt. Elwes' statements as to the abundance of butterflies in that part of the world. He remarked on the occurrence of Spanish forms in the district, and on the absence, as a rule, of the peat-bogs so common in the Swiss Alps. The discussion was continued by Mr. Distant, Mr. White, Dr. Sharp, and others.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Sept. 22nd, 1887. R. Adkin, F.E.S., President, in the chair. Mr. Jager exhibited *Stilbia anomala*, from Tenby; *Callimorpha hera* and var. *lutescens*, from Devon; and stated he had obtained ova of *hera* and now had the larvæ feeding. Mr. Sheldon, *Xanthia fulvago* and var. *flavescens*, and remarked on the number of melanic specimens which he had observed in a particular valley in Derbyshire. Mr. Cooper, dark forms of *Eugonia queranaria*, upon which some interesting comments were made by Mr. Goldthwaite. Mr. Carpenter, a number of specimens of *Argynnis paphia* var. *valesina*. Mr. Tutt, *Melanthia bicolorata* var. *plumbata*, from Ramoch. Mr. Oldham, *Dicycla oo*, from Epping Forest; a dark form of *Arctia caia*; and a variety of *Pararge megæra*. It appeared from the remarks of members that *D. oo* had occurred freely at Epping and in some parts of Kent. Mr. Skinner exhibited a specimen of *Deiopeia pulchella*, taken at Dover, 1886; a bleached specimen of *Epinephele ianira*;

and very pale forms of *Zygæna filipendulæ*. Mr. Adkin, bred *Melanippe rivata*, *M. galiata*, and *Anticlea cucullata*. Mr. Goldthwaite, varieties of the underside of *Lycæna bellargus*. Mr. Elisha, *Gelechia hippophaella*, from Deal; *G. vilella*, *Incurvaria capitella*, *Agrotis ashworthii*, &c. Mr. J. Jenner Weir, *Carpocapsa saltitans*, and living specimens of the larva of *Myrmeleo europæus*, and made some interesting observations relative to his exhibits. Mr. West, of Greenwich, showed eight species of *Haliphus*, taken by him out of one pond. Mr. Billups, on behalf of Mr. Tugwell, exhibited *Limneria ensator* and *Macrocentrus linearis* var. *pallidipes*, both bred from *Cucullia gnaphalii*; and on behalf of Mr. Turner, two old wedges which had been used to fasten the chairs holding the rails to the sleepers on the London, Brighton and South Coast Railway, between New Cross and Forest Hill, containing nests of *Osmia rufa*, and read notes.

October 13th.—The President in the chair. Dr. Rendall exhibited *Xanthia fulvago* var. *flavescens*, &c. Mr. Jager, varieties of *Luperina testacea*, from Tenby. Mr. Tugwell, a specimen of *Sphinx convolvuli*, taken at Greenwich; a fine streaked variety and other nice forms of *Spilosoma menthastri*. Mr. Wellman, bred examples of *Acidalia immutata*. Mr. Levett, two varieties of *Smerinthus tiliæ*. Mr. Oldham, Lepidoptera from India. Mr. Fremlin, specimens of *Vanessa urticæ*, showing absence of colour, and contributed notes. Mr. Jenner, of Lewes, two specimens of *Acidalia immorata*, a species new to Britain, which he stated were taken near Lewes by Mr. H. C. Morris. Mr. South, *Melanippe sociata*, *M. montanata*, from the Hebrides; an apparently apterous specimen of *Zygæna filipendulæ*, bred by him at Folkestone, 1885; a specimen of *Z. loniceræ*, appearing to have four antennæ. After some discussion, Mr. Tugwell expressed an opinion that the second pair were merely the pupal covering of the antennæ proper, as the insect did not seem to have altogether escaped from the pupa-case, part of it still adhering to the head. Mr. South also showed four varieties of *Argynnis selene*, and one of *A. euphrosyne*; and read notes relative to his exhibit, and on the result of experiments made by him in reference to the pale spots appearing on certain of the Argynnidæ. Mr. West (Greenwich), *Hydaticus seminiger*, and stated it was twelve years since he last met with this species. Mr. Mauger, Hymenoptera from the Brazils.—H. W. BARKER, *Hon. Sec.*

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AGROTIS FENNICA.

By N. F. DOBRÉE.

As the information in all such works as I have read, whether English or Continental, regarding this rare insect is very meagre, and the descriptions of it hardly any better, all apparently copied from one another, anything new regarding it will interest.

I have for years sought for it fruitlessly in Petersburg, Finland, and Stockholm, where it is not known to occur, so far as I could learn, and also in the many Continental price-lists that are sent me annually. I have also written for it to dealers in Montreal and Quebec without success, and I failed to find it in the entomological collection sent over for the late Colonial Exhibition in London by the Montreal Society.

My friend the late Mr. George Norman, who, in 1874 and 1875, spent two seasons entomologising in Canada on the borders of the lakes near Niagara, found it there of excessive rarity. He got but a single one himself at rest on palings in the month of August, and, though the object of his particular research, he could only acquire two more from resident collectors he met. All these specimens are males, and agree well with the drawings in Newman and Herrich-Schäffer.

I have now quite lately received it from Western Siberia, and seem at last to have traced it to its home. My correspondent, who, I may say in parenthesis, is the curator of a German museum and an experienced entomologist, after a five years' sojourn in the neighbourhood of Wladiwostock on the Amoor River, chiefly made for entomological purposes, writes me:—

"I am not surprised that you are so much struck with the difference between the male and female, but I can fully answer you on that point. The specimens with the broad yellow-ochreish shading on the inner margin of the upper wing are males; the females never have it, at least not in Siberia. I have bred it myself in Nicolajefsk on the Amoor, and was also at first surprised to get two such different imagos from the same larvæ. In 1884 I found about 200 of the larvæ around Nicolajefsk, but unfortunately all but ten were ichneumoned. The larvæ feed in preference on *Epilobium* and *Corydalis gigantea*, and remain by day hidden in the earth. I have two of these larvæ preserved, of which I hope to send you one. It is an insect which occurs generally here and there throughout Amoorland, and I was fairly successful in my captures of it."

A point of great interest in this communication is the establishment of a great difference between the male and female. The figures in Newman and Herrich-Schäffer are all of the former; but the latter, the female, seems to have been unknown to any of them. The following is a description of both sexes from the specimens I possess:—

Male.—Fore wings warm bistre-brown, with faintly darker transverse lines, the ground colour shading off on the inner margin to a broad band of light ochre; stigmata dirty white. Hind wings and body a very pale shade of the fore wings.

Female.—Fore wings quite uniform dark ashy grey, with faintly darker transverse lines, similar to the male; stigmata dirty white. Hind wings and body very light shade of the upper wings.

It will thus be readily seen that the two sexes might easily be mistaken for quite different species!

I may further add to the general description that in both sexes the wings are remarkably narrow, and the stigmata exceptionally wide apart; in fact Guenée is quite correct in his remark that the insect has a look quite *sui generis*.

Mr. G. Norman's Canadian specimens, which are all males, quite agree with mine of that sex from Amurland in size and colouring.

Beverley, E. Yorks, November, 1887.

ON A JAPANESE SPECIES OF *SANDALUS*.

BY GEORGE LEWIS, F.L.S.

*SANDALUS SEGNIS* (male and female).

THE genus *Sandalus* was formed by Knoch in the first year of this century to receive two insects from North America, and the present species, which is the first from Asia, is somewhat similar to them. The known species of *Sandalus* number, according to the Munich Catalogue, to about twelve; they are rare in collections, and certainly local or uncommon in nature, and I believe the imagos are very short-lived. I found the first specimens in Japan, on the 10th June, clinging to some old railings which were partly rotten and lichen-covered, and from the condition of the specimens it was evident that they had just left their pupa-skins. In the daytime the beetles are very sluggish and inert, and I think it possible that they never move, unless they are disturbed, until the evening when they fly to meet their mates. The disparity in the size of the sexes classes *Sandalus* with those insects in which the female is often several times larger than the male.

The figures given of a small male and an ordinary-sized female will be useful in giving an idea of the general outline of the genus (even if it does not serve to identify the species), which is a peculiar one, and may not be familiar to entomologists whose studies range over several classes of insects. The structure of the second and third pairs of legs and the claws at the end of all the tarsi will call to mind those of *Melolontha*, and they are doubtless used for clinging and moving in the same way; but in *Sandalus* the fore tibiae are simple and not armed, as in the other. The Lamellicornes use their strong fore tibiae for delving and excavating, while *Sandalus* belongs to the Rhipidoceridae, a family whose members during the stage of growth feed on

timber, and the laborious work of their lives is, as in the *Longicornes*, performed with their mandibles. There are no sexual differences in the legs or feet of *Sandalus* of much importance, except that the males have slightly dilated tarsi.

From the rarity of the individuals and the fewness of the species known, my speculation is that the great size of the female is owing to the magnitude of her eggs rather than to the quantity she bears, for if the current ideas on the differentiation and distribution of animals approximately correspond with reality, the greater the number of ova distributed by any female the greater the chance, the other conditions of life being equal, of the individuals becoming abundant and the species wide-spread.

SANDALUS SEGNIS.

Ovato-elongatus, crassus, griseo-pubescent; fronte utrinque tuberculato. Mas elytris brunneis; l. 11-18 mill. Fœm. elytris thoraceque concoloribus; l. 19-25 mill.

Male.—Head and thorax closely and slightly rugosely punctate, blackish, and densely clothed with a greyish brown pile; thorax with a medial line, hind angles emarginate and biangular before the scutellum. The forehead is conspicuously tuberculate at the insertion of the antennæ. The scutellum is obscurely black, and the elytra brown. The elytra have the suture a little raised, with three distinct dorsal striæ, and a fourth nearly obsolete, and visible only on the apical half of the wing-case; the interstices are punctured in longitudinal but slightly irregular rows, with the spaces between the punctures minutely rugose.

Female.—Sometimes twice the size of a male, and at others six times as large. The thorax is proportionately broader, and the angles, both at the sides and before the scutellum, are less acute. The elytra are concolorous with the head and thorax, and clothed throughout with a greyish pile; the punctures in the interstices are less deep and in less regular lines, and the spaces between the punctures are more rugose. The legs are the same colour as the under part of the body in both sexes.

Found at Nikko and Kashiwagi. Five examples.

PARASITES OF THE "HESSIAN FLY"

(Cecidomyia destructor, Say).

BY ELEANOR A. ORMEROD, F.E.S.

So much has been written during the past season relatively to the species of the parasites of *Cecidomyia destructor*, Say, which we have found present amongst us in this country, that it may be of interest to many of your readers to know that the opinion lately expressed by Prof. C. V. Riley (Entomologist of the United States) that these parasites would probably be found to be Russian, or of European origin, has been recently confirmed by Dr. Ch. Lindeman, Professor at the Academy of Agriculture, Moscow (whose works on Hessian fly and its parasites are too well known to require comment), who has recently named four species out of a collection of parasites which he had permitted me to forward him, as being Russian kinds.

In a letter lately received from him, Dr. Lindeman informs me that amongst the specimens of parasites which he finds amongst those reared from puparia of *C. destructor*, preserved from what were found on corn grown last year at Daleally, Errol, N.B., by Mr. D. Taylor, there are the following species:—

Semiotellus nigripes, Lind.

Tetrastichus rileyi, Lind.

Merisus intermedius, Lind., var. *micropterus*.

Platygaster minutus, Lind.

These are Russian species, which will be found described at length in Dr. Lindeman's paper, "Die Pteromalinen der Hessenfliege (*Cecidomyia destructor*, Say)"; and Dr. Lindeman has also had the great kindness to send to me a gift of a small collection of the four above-named species, and one variety of these parasites, which I am now having displayed for microscopic use with the utmost care.

Besides the above species, named by Dr. Lindeman from personal knowledge, he found in my consignment a single specimen, which he writes me agrees well with the description given by Prof. Riley of the American *Merisus destructor*, Say.

From the above observations it appears to me that we may look on a part of our visitation of *Cecidomyia destructor* having been derived from Russia; and with regard to what may be inferred from the presence of the species commonly known as

the American *Semiotellus* = *Merisus destructor*, I do not at all see that the presence of this militates against the whole of the attack being of European origin.

In the works of Kollar and Kaltenbach on injurious insects (to go no further) this parasite is mentioned under its synonym of *Ceraphron destructor*, Say, as a German parasite, and therefore it appears to me that the whole of our attack is extremely likely to be of European derivation.

For further information as to this special parasite (namely the *M. destructor*) in our present difficulties, with list of synonyms, the reader is referred to the paper on the "Parasites of the Hessian Fly," by Prof. Riley, published in the 'Proceedings of the United States National Museum, 1885'; and whilst I believe I am permitted by both the distinguished entomologists to whom I have alluded to mention the above results of investigation, at which in the case of Prof. Riley I have had the advantage of being present, I must also express my sincere thanks for such great aid in this most difficult investigation.

Torrington House, St. Albans, Nov. 11, 1887.

NOTES ON *SCOPARIA ANGUSTEA*.

BY W. G. SHELDON.

THIS species has been until lately supposed to be a single-brooded one, appearing in August and September, and hibernating until the spring. Mr. C. G. Barrett, however (E. M. M. xxii. 42), says:—"Last May, at Plymouth, when searching on the old walls round the harbour, I found several larvæ of this species full-fed, and also pupæ. From these the moths emerged after a few days. It therefore seems that this species produces a spring brood on the south coast, when the winters are so mild as to allow the larvæ to feed through them, and this habit probably obtains to some extent throughout the South of England. I cannot, however, remember that I ever saw a spring specimen at Pembroke, where the moth was abundant in the late autumn." Mr. G. T. Porritt again (E. M. M. xxii. 209) says that he took the species commonly at Huddersfield at the end of July, and adds that he received young larvæ from

Mr. W. H. B. Fletcher, of Worthing, on the 11th of August, and that these produced imagines in October; he also states that Mr. Fletcher is satisfied it is only single-brooded at Worthing.

I now come to my own experience of the species. Early last February (on the 6th, I believe), I was looking at some moss which covered the surface of a chalk rock in this neighbourhood, and discovered that it was full of the larvæ of a *Scoparia*. I peeled a piece off, and found full-fed larvæ; and not only these, but pupæ. This somewhat surprised me, and, thinking they might prove something new, I collected a good many; the spot, however, on which they occurred was rather inaccessible of approach, and, getting somewhat too eager, considering the slippery state of the ground (it was a partial thaw), I came down much faster than I went up, and in so doing upset my box of pupæ. I did not feel inclined to climb again that day, and so, picking up myself and as many of my prizes as I could find, I wended my way homewards.

Thinking the matter over, I came to the conclusion that I had got *Scoparia dubitalis*, which is very common everywhere here, and so placed the pill-box containing my remaining pupæ in my breeding-room. Happening to look into this box, on the 20th of March, I was much surprised to find all of them had produced imagines of *S. angustea*, apparently some time back, as they were dead. As soon as I got an opportunity I went to the locality for more (on March 24th), but found that the majority had emerged, and I was only able to procure about a dozen: these came out by the end of the month.

On August 13th I again visited the locality, and found full-fed larvæ, pupæ, and one imagine. From the pupæ taken on that day I bred, during the month, a long and fine series. It is thus conclusively proved that in this locality, at any rate, the species is double-brooded.

The variation in the time of emergence in different localities is most strange. Mr. Porritt gets the single brood at Huddersfield late in July and early in August, within a week of the date when the second brood appears here. Mr. Fletcher gets his single brood in October. Again, Mr. Barrett bred several specimens of the first brood in May at Plymouth, which one would expect to be as early a locality as any in the British Isles; and yet in this district, in an exposed situation facing the

north-east, I find the insect in March, and I am disposed to think that, in favourable seasons, it would emerge as early as February.

The two broods vary considerably in appearance and habits. The March brood is much smaller, the ground colour paler, and the fascia more strongly delineated than those appearing in August. The second brood is also much more active than the first; in fact they are the most torpid and sluggish insects I have ever seen, so unlike all others of the group, which are noted for their activity.

It would be interesting to hear from others their experience of the time of appearance of this species. From the retiring habits of the early brood and the time of the year at which it emerges, I am disposed to think it has been overlooked in many localities, and would turn up if sought for at the proper period.

Rose Cottage, Oval Road, Addiscombe, Oct. 17, 1887.

A RATIONAL METHOD OF SETTING THE UNDER SIDES OF RHOPALOCERA.

BY PERCY RENDALL, M.D.

I HAVE been wishing for some years past to bring prominently before the large section of entomologists, that can be reached through the columns of this Journal, the following suggestions on the subject of exhibiting the under sides of Rhopalocera.

When collectors wish to display the under side of a butterfly the insect is turned upside down, violence is offered to Nature, and the artistic effect is destroyed. A pin is too often stuck through its thorax, and its legs, as if in protest against so unnatural a position, stray wildly in all directions in a distorted and quasi-epileptic fashion. The wings of an insect have a natural tendency to convexity, from the thorax to the tips; consequently when reversed they will be found to have a similar concavity in the same axial line, so that, when they dry, collectors with whom "setting is," judged not to be, "absolute waste of time and profitless labour" (Entom. 93), complain that the under sides of their butterflies "spring." What I suggest is this:—Take a leaf out of Nature's book—set them, as they are so often seen,

settled on a flower-head, and you will find that the beauty of their varied profiles will amply repay you.

The following practical hints may prove serviceable to any who care to give my method a trial:—Let the insect, with its wings closed over the thorax, lie upon your hand or upon a flat sheet of cork, and pass the pin through its body opposite the junction of all the principal nervures on the under surface of the hind wing, but take care not to interfere with the movements of the wing-joints. The pin should now be introduced so as to form rather more than a right angle with the wings, its head sloping slightly forwards; at least one-third of the pin should project below the insect's body, in order that when placed in the collection it may be well above the paper. This is a precaution that I adopt with all my insects, otherwise the specimens simply provide meals gratis for all passing mites, who soon discover that they can get refreshment by merely standing on their hind legs, whereas my experience is that they do not climb much, but live chiefly on ground-game! I then place the insect flat, upon a relatively large board, with its wings towards the groove, and by that means I have the slope of the board to neutralise the thickness of the body, and thus get the wings flat. It is necessary in pinning the insect on to the board to be careful not to exaggerate the obtuse angle that the pin forms with the wings, otherwise the cilia of the upper pair do not cover those of the lower, and its appearance is spoilt. Care must also be taken to arrange the wings so as to leave a distinct notch between the fore and hind pairs, and the antennæ should be fixed well in advance of the costa, and the legs closely adjusted to the sides of the thorax; the apex of the abdomen must also be drawn down and secured clear of the ventral borders of the hind wings, which are apt to conceal it. To fasten the wings, *in situ*, I always use strips of Silurian note-paper, broad enough to cover the outer-third of the wings.

The small size of the bodies of butterflies renders this way of setting them, in my opinion, both natural and satisfactory. It occurs to me, however, that some may instance the Hesperidæ as presenting special difficulties, owing to



GONOPTERYX RHAMNI.

the relative size of their bodies to their wings being so great; but a little practice, even with this family, will enable anyone, whose "fingers are not all thumbs," to overcome these drawbacks.

In conclusion, insects should of course be set so that male and female specimens face each other in the series.

The accompanying outline woodcut of *Gonepteryx rhamni* will serve to illustrate this particular method.

16, Little Grosvenor Street, W., October 14, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA AT BALHAM. — On August 6th last my brother and I had the pleasure of seeing *V. antiopa* near the railway station; it was only a few yards from us flying over a freshly watered road; its flight appeared quite different to any other of our native butterflies. It alternately fluttered and sailed over the road, and then turning sideways wheeled over some palings at a brisk rate and disappeared. It looked particularly dark and glossy in the bright sunlight, and the hind margins had a misty appearance. With regard to the colouring of the borders of *V. antiopa*, in my opinion the white border is due only to fading of the yellow, which colour is always present in all freshly emerged specimens; the white borders of those which have been taken in England seem towards proving that they are emigrants from other countries.—F. W. FROHAWK; Balham, S.W., November, 1887.

LYCÆNA CORYDON OCCURRING OFF THE CHALK. — A parallel case to that mentioned by Dr. Rendall (Entom. 229) occurs to me, and under somewhat similar conditions, viz., odd specimens of *L. corydon* and plenty of *Chrosis aleella* (*tesserana*), &c., occurring on the tertiary clay in Chattenden Woods, far removed from the usual haunts of these species. I think the answer lies in the fact that almost all the tertiary (Cainozoic) deposits of the London Basin, in Kent, Essex, Surrey, Middlesex, &c., lie on one or other of the cretaceous strata. In some cases the cretaceous strata are at a great depth below the surface, and the tertiaries are correspondingly thick; but where the tertiaries, owing to any cause (denudation or otherwise), are comparatively

thin, and the cretaceous very near the surface, the influence exerted on the flora must necessarily be very great. I think this is so in all cases where isolated specimens of a species, generally restricted to some particular soil, have been found in unlikely places. *L. corydon* has been taken in Epping Forest (Entom. xviii. 242; and Newman's 'British Butterflies,' p. 132); also at Barnes Common (Entom. xviii. 316). I dare say that many readers of the 'Entomologist' could cite other cases. These isolated specimens are generally fine, and probably fed very near the spot where captured, thus showing the existence of a partial cretaceous flora; but it seems that a specimen or two, by some means, must have settled there previously, otherwise where did the ova come from? It is, of course, next to impossible to show how such females have been introduced, whether for ages they have just managed to exist, or whether a female has wandered thither in comparatively recent times, and the progeny, finding the natural food-plants, have managed to get through life in a strange land and under new conditions. Newman, in his 'British Butterflies' (p. 132), gives an interesting instance of Mr. Harwood's, of the occurrence of *L. corydon* in the High Woods, near Colchester, which concludes as follows:—"There is no chalk anywhere in the district, and no marl within three or four miles of the High Woods."—J. W. TUTT; Rayleigh Villa, Blackheath, S.E.

LYCÆNA CORYDON AWAY FROM CHALK.—On the 10th August last, a friend captured this butterfly at Groombridge, on the embankment close to the railway station. I was with him at the time, and shortly afterwards took a specimen near the same spot. Later we were collecting on Broadwater Common, a few miles from Groombridge, when he captured another flying amongst heather. Our three were all males, and very fresh in condition. At Groombridge there is no chalk whatever, nor is the soil inclined to be chalky in the least for miles around. I have never noticed this butterfly in the locality before this summer, nor can I find out from anyone that it has ever been taken there before.—W. H. BLABER; Lindfield, Sussex, October 31, 1887.

DWARF FORMS OF LYCENIDÆ.—With reference to the note of Mr. Gush (Entom. 266), is it not more than probable that the dwarf forms of *Lycæna corydon* are the result of larvæ having had insufficient or not sufficiently nutritious food? I have some

pigmy specimens of *L. corydon* from the Dover cliffs, smaller than many *L. icarus*. There the food-plant is spread over a wide area, sometimes growing luxuriantly in protected hollows, at others growing very sparsely on the exposed cliffs. I have always considered the small dwarf specimens as having probably suffered from lack of food in the larval state, and, as a matter of fact, often find them in the more exposed situations, especially when freshly emerged. I have specimens of *L. bellargus* probably not larger than my largest *L. minima*, which I have always supposed were dwarfed in the same way. I dare say Mr. Gush would find dwarf specimens every year; I have seen them now, without exception, for many years successively at Dover. All the genus seems especially liable to this peculiarity in a state of nature. I have some very small *L. icarus* captured flying among a large number of normal-sized males. *L. medon* varies very much in the same direction.—J. W. TUTT.

SPHINX CONVULVULI.—The following are additional records:—

Scotland.—I have to record the capture of two specimens, and also one of *Acherontia atropos*, in this district, during the month of September.—W. PRINGLE; 168, Croft St., Galashiels.

Lancashire.—I have had brought to me three specimens, all very much worn. I also took one *Chærocampa celerio*, but unfortunately let it escape.—H. MURRAY; Lowbank Villas, Carnforth.

Cambridgeshire.—I captured three specimens after the 3rd of September in a garden, where, in 1885, I captured eleven. I have no doubt had I been able to look after them earlier this year I should have taken a great many more. I have taken them, without exception, flying at the flowers of the tobacco plant, which proves a great attraction for moths, especially hawk-moths, right on up to the end of October. Besides these *S. convolvuli* I have heard of several others being seen or taken in the district.—WM. FARREN, jun.; 14, King's Parade, Cambridge.

Surrey.—A specimen was captured flying during the daytime in Battersea Park Road, on the 6th of September. — T. SUTTON. I took one specimen flying in a garden at dusk about September 12th. I have heard of another which was bred from a larva found feeding upon the common bindweed two years ago.—H. M. LEE; Gladstone House, Sutton.

Hampshire. — During September I captured, early in the evening, eight specimens, and saw several others. It appeared

to have been common here. I have never taken it before in this locality.—L. MESSEL; Beachfield, Sandown, Isle of Wight.

The Lincolnshire specimens of *Sphinx convolvuli* (Entom. 303) were recorded by C. K. TERO, not C. R. LOW.

CATOCALA FRAXINI IN SURREY.—I captured a specimen of this insect upon a tarred paling on September 18th. It is the first I have heard of being taken in the neighbourhood.—H. M. LEE; Gladstone House, Sutton, Surrey.

DICRANURA BICUSPIS, &C., AT TILGATE.—I took a trip to Tilgate Forest on September 3rd, to try if the larvæ of *Dicranura bicuspis* could not be beaten, and was fortunate enough to procure a full-fed one, which I thrashed out of alder. It refused to feed in confinement, and after wandering about in the breeding-cage for five days condescended to spin a cocoon on a piece of bark which I had introduced to it for that purpose. The figure in Buckler's 'Larvæ' is very good, in fact unmistakable. The usual autumnal larvæ were fairly plentiful, and a considerable number of such species as *Cymatophora fluctuosa*, *Acronycta leporina*, *Ypsipites impluviata*, *Notodonta dictæoides*, *N. dromedarius*, *Geometra papilionaria*, &c., fell to the beating-stick.—W. G. SHELDON; Rose Cottage, Oval Road, Addiscombe, October 17, 1887.

RETARDED EMERGENCE OF LOPHOPTERYX CUCULLA.—Last autumn a friend kindly sent me a few of these larvæ, which I fed up on sycamore leaves, and which in due time pupated. All but three came out in perfect form between June 5th and 21st. On the 3rd of this month, on looking into my breeding-cage, I saw a moth fluttering about, and, to my surprise, found it to be a perfect specimen of *L. cuculla*. I suppose this is a very unusual occurrence; and what puzzles me is whether it is a retarded emergence, or a very early one of a second year's pupation.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, September 12, 1887.

CATEPHIA ALCHYMISTA.—Mr. Tutt (Entom. 306) mentions the capture of two specimens of this species in Britain. A third specimen was caught at "sugar" by Mr. W. Borrer, jun., near Hailsham, Sussex, on the night of the 4th June, 1875. I was staying at Hailsham at the time, and saw the specimen soon after its capture.—H. GOSS; Surbiton Hill, November, 1887.

THE TEPHROSIA QUESTION.—In June last I sent a few notes concerning *Tephrosia crepuscularia* or *biundularia* larvæ (Entom. 159), and I would now add that these larvæ were fed from first to last on the blackthorn, and their resemblance often to the twigs was very striking. They varied in shades of colour according to age, from pale brown to almost black, some of the same stage of growth differing in this way. Leaving the neighbourhood the second week in June, I left them with an entomological friend, who took careful note of them. They commenced to turn to pupæ on June 21st, and the imagines began to appear on July 7th. All the examples were diminutive in size compared with the early brood and very similar in colouring, there being only two forms, one with the ground-colour white, the other brown. The transverse markings are alike in each, being delicately defined as in those of the late examples of the first brood, which usually appear at the end of April and in May. Five pupæ did not emerge, and I have them apparently living still.—T. B. JEFFERYS; Clevedon, October 19, 1887.

ACIPTILIA PALUDUM, Zell.—This delicate and pretty little plume-moth has again occurred here during the past season. I understand that the Rev. Charles Digby has also again met with it near Studland, and Mr. Eustace Bankes has found it near Corfe Castle; so that it is probable that it will in future be found, if worked for, on most of our heathy bogs. All our efforts to find the larvæ have failed; it would, however, appear to be double-brooded, as I found several in fine condition on the 14th and 16th of June. Thinking that these would be the progenitors of a second brood, I refrained from taking more than the few above noted. The first met with of this latter brood occurred on August 4th, and the last seen was on the 27th. Although on some of our finest and quietest evenings in August scarcely an individual was seen, it did not hesitate occasionally to fly briskly in the full blaze of a hot sun. A moderately dewy evening appears to draw this little moth out most freely, and the evenings of last August were remarkable for an almost total absence of dew.—O. P. CAMBRIDGE; Bloxworth Rectory, Dorset, October 4, 1887.

CANNIBALISM AMONG EUPITHECIE LARVÆ.—Having collected some larvæ of *E. coronata* in South Wales (among which there happened to be one of a *Noctua* larva), I was surprised one

morning to find that about six of the *coronata* larvæ had completely devoured the *Noctua* larva, which was about three times the size of the former. I was aware of cannibalism existing among the larvæ of *E. minutata*, but have hitherto not been acquainted with it in the case of *E. coronata*.—J. JAGER; 180, Kensington Park Road, Notting Hill, September 15, 1887.

LARVA RAPIDLY CHANGING COLOUR?—Mr. Hambrough's query as to larva changing colour (Entom. 284) may probably be accounted for by the common fact in optics, that blue or purple is the complementary colour to yellow or orange; therefore a fixed gaze for a minute or so upon the marigold and then upon a neutral-tinted object, like the larva, the latter would be sure to assume for a few seconds a blue or purple tinge. I never heard of larvæ changing colour spontaneously, and believe this explanation will easily account for it.—E. WHEELER; 31, Triangle, Clifton, November 5, 1887.

THE HESSIAN FLY PREVIOUSLY IN GREAT BRITAIN.—In the report of the October meeting of the Entomological Society of London (Entom. 309), I notice that Prof. Riley was of opinion that the Hessian Fly was of recent introduction into our island, and strengthened his opinion by remarking that it "had not been recorded by Sir Joseph Banks, Curtis, Prof. Westwood, the late Mr. Kirby, or by any other entomologist in this country who had given especial attention to economic entomology," &c. The founder of this Magazine had, however, noticed it at least eleven years ago, for in the 'Entomologist,' under date February, 1876, he writes:—"I trust the mischief (some linen damaged by *Arctia fuliginosa* larvæ) may not occur again; as in the case of the yellow-tail moth, the *Hessian fly*, and various other insects which have seemed to threaten a continuous loss, and from time to time have elicited prophecies of famine, which happily still await fulfilment, this visit of the ruby tiger may possibly never recur. Sincerely hoping this may be the case, I must content myself with . . . continuing to give this subject my best and most unremitting attention.—EDWARD NEWMAN." The italicised clauses will serve to make this plainer.—E. G. BAYFORD; West Melton, near Rotherham, November 4, 1887.

ACANTHOCINUS ŒDILIS.—A few days ago a fine male of this species was taken, flying across the packing-room of a Bolton cotton-mill; and, although inquiries were made, no new timber

could be heard of as having come into the neighbourhood lately. It probably came in the egg state. About three years ago one of the same species was captured down a coal-pit, having evidently got there with timber for propping purposes. — E. STOTT; Lostock, Bolton, October 31, 1887.

ENTOMOLOGICAL COLLECTIONS.—I have read with considerable interest this discussion which is being carried on in the pages of the 'Entomologist,' and am gratified to find that the subject has been so carefully and thoroughly studied. I perfectly agree with Mr. Tutt, as far as the study of physics, biology, and mathematics being of more educational value than Entomology, 'but I most decidedly differ from him when he states that the study of Natural History taken as a whole is of more educational value than the study of any one of its divisions. I firmly believe that more has been done to retard the progress of Natural History by people who profess to have grasped the whole subject, than by any other cause. It is such men as these who are so ready to make "new and distinct species." I hold that no man can thoroughly grasp the whole of Natural History, and that if every naturalist was to devote himself to that group (the smaller the better) to which he was most attached we should have a much more satisfactory and reliable classification, and more knowledge towards the advancement and perfection of the science than we have at present. There are two kinds of education: the first, where one learns for his or her own benefit and interests; the second, where one learns that he may impart his knowledge to others. Now everyone will admit that this latter must be the more complete and thorough of the two. I understand Mr. Tutt to argue that one ought to take the whole subject of Natural History to derive an educational result, but I would ask him one question: What benefit to the naturalists at large would be the knowledge of a man who only knew his study imperfectly? As I remarked above, it is impossible for one individual to embrace the whole subject so thoroughly well, as to be enabled to render material help. What we really require is men who will be content to work at one group, and each to study the classification of his particular branch as thoroughly as he is able. Then, when these several arrangements are obtained, and classified under the one heading of Natural History, we may hope for a more satisfactory and trustworthy result than at present,

but not before. There is one other point in Mr. Tutt's article to which I should like to call attention, and that is the setting of entomological specimens. From a purely scientific point of view I am convinced that it is unnecessary, but I think that, if the specimens are to be preserved, we ought at least to pay some little attention to the fact that after taking life for the advancement of Science, we ought to make the object as pleasing to the eye as we are conveniently able. The non-setting of specimens would be very convenient to those who will not be at the trouble to master good setting; and I know too well, from experience, how long that takes to learn.—A. E. HALL; Norbury, Pitsmoor, Sheffield, October, 1886.

ENTOMOLOGICAL COLLECTIONS.—I suppose that few, if any, collectors would say that they set their insects either for pleasure or recreation, and it may be that Mr. Tutt is right in considering setting unnecessary when they are required for purposes of classification and reference only. On the other hand, if the specimen is to be "a thing of beauty," in order to be "a joy for ever" it is imperative that it should be properly preserved. To this end all due regard must be paid to the symmetrical disposal of the wings, the antennæ must be placed in proper position, the body brought up to the right level, and not a scale ought to be removed. For my own part I would rather possess one good, well-set specimen, than half a dozen indifferent ones, rare or common; in fact, my aim has always been to get together not a large series, but each insect absolutely perfect. Perhaps the following suggestion may be feasible. It is that unset specimens should be employed by entomologists desiring an exchange for scientific purposes alone. This to be stated on both sides, preliminarily, of course, or much disappointment and annoyance might ensue. Such an arrangement might save a good deal of trouble to persons not particular about having set insects. It seems strange that any apology should be thought needful for those who devote their time or leisure to the study of insect life, or even collecting specimens of whatever order it may be. The idea never appears to suggest itself in the case of the botanist, geologist, or conchologist. But it is no new thing; as the case of the noble lady in whose honour the name of our fritillaries was given will testify, and who was supposed to be incompetent of

making a will because of her love for entomological pursuits. All these objectors have been fully answered by those renowned entomologists Messrs. Kirby and Spence, and I would refer all in doubt about the utility of the study of insects to that able and instructive work the 'Introduction to Entomology.' And, by the way, could not some entomologist undertake the compilation of an index to the work, with a view to a new edition, thereby enhancing the value of an almost invaluable book ten-fold?—JOSEPH ANDERSON, Jun.; Chichester.

NIGHTJAR FOLLOWING MOTHS INTO HOUSE.—While taking moths by the light of the gas in my room on the 2nd of August last, I received a visit from a nightjar, *via* the open window. The bird was so frightened at falling into the hands of such an enemy as an entomologist, that he would scarcely believe his good luck when I let him fly the next morning, and took ten minutes to consider whether or not he had forgotten how to do so.—(Miss) K. DINGWALL; Knollys Croft, Leigham Court Road, Streatham, S.W.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 2nd, 1887.* Dr. David Sharp, F.Z.S., President in the chair. Mr. Stevens exhibited a specimen of *Acidalia immorata*, L., purchased by him some years ago at the sale of the collection of the late Mr. Desvignes. Mr. Stevens remarked that specimens of the insect lately captured near Lewes had been described last month by Mr. J. H. A. Jenner as a species new to Britain. Mr. Adkin exhibited, and made remarks on, a series of male and female specimens of *Arctia mendica* from Co. Cork; he also exhibited for comparison two specimens of *A. mendica* from Antrim, and a series of bred specimens from the London district. Some of the males from Cork were as white as the typical English females, but the majority of them were intermediate between the form last mentioned and the typical English form of the male. Mr. Enock exhibited a specimen of *Calocoris bipunctatus* containing an internal parasitic larva. Dr. Sharp exhibited three species of Coleoptera new to the British list, *viz.*: (1) *Octhebius auriculatus*, Rey, found by Messrs. Champion and Walker some years

ago in the Isle of Sheppey, but described only quite recently by M. Rey from specimens found at Calais and Dieppe. (2) *Limnius rivularis*, Rosenh., found by the late Dr. J. A. Power at Woking; the species, though not uncommon in Southern Europe, had not, he believed, been previously found farther north than Central France. (3) *Tropiphorus obtusus*, Bonsd., taken by himself on the banks of the Water of Cairn, Dumfriesshire; he had considered previously that this might be the male of *T. mercurialis*, but M. Fauvel, who was studying the European species of the genus, informed him that this was not the case. Dr. Sharp also exhibited a *Goliathus* recently described by Dr. O. Nickerl as a new species under the name of *Goliathus atlas*, and remarked that the species existed in several collections, and had been supposed to be possibly a hybrid between *G. regius* and *G. caecicus*, as its characters appeared to be exactly intermediate. He also exhibited a living example of the Mole Cricket, *Gryllotalpa vulgaris*, from Southampton; between the spines of its hind legs were a number of living Acaridæ placed in a symmetrical manner so as to appear as if they formed a portion of the structure of the limb. Mr. Eland Shaw exhibited two species of Orthoptera, which had been unusually abundant this year, viz. *Nemobius sylvestris*, from the New Forest, and *Tettix subulatus*, from Charmouth, Dorset. Mr. E. B. Poulton exhibited the cocoons of three species of Lepidoptera, in which the colour of the silk had been controlled by the use of appropriate colours in the larval environment at the time of spinning up. Mr. Poulton said this colour susceptibility had been previously proved by him in 1886 in the case of *Saturnia carpinii*, and the experiments on the subject had been described in the Proc. Royal Society, 1887. It appeared from these experiments that the cocoons were dark brown when the larvæ had been placed in a black bag; white when they had been freely exposed to light with white surfaces in the immediate neighbourhood. Mr. Poulton stated that two other species subjected to experiment during the past season afforded confirmatory results. Thus the mature larvæ of *Eriogaster lanestris* had been exposed to white surroundings by the Rev. W. J. H. Newman, and cream-coloured cocoons were produced in all cases; whilst two or three hundred larvæ from the same company spun the ordinary dark brown cocoons among the leaves of the food-plant. In the latter case the green surround-

ings appeared to act as a stimulus to the production of a colour which corresponded with that which the leaves would subsequently assume. Mr. Poulton further stated that he had more recently exposed the larvæ of *Halias prasinana* to white surroundings, and had obtained a white and a very light yellow cocoon—far lighter than the lightest of those met with upon leaves. The larva which spun the white cocoon had previously begun to spin a brown one upon a leaf, but upon being removed to white surroundings it produced white silk. Mr. Stainton suggested that larvæ should be placed in green boxes, with the view of ascertaining whether the cocoons would be green. He understood that it had been suggested that the cocoons formed amongst leaves became brown because the larvæ knew what colour the leaves would ultimately become. Mr. Poulton said he felt convinced that the whole process was entirely involuntary, and that the susceptibility had arisen through the action of natural selection. The discussion was continued by Mr. Waterhouse, Dr. Sharp, Mr. McLachlan, and others. Mr. Klein read “Notes on *Ephestia kuhniella*,” and exhibited a number of living larvæ of the species, which he said had been recently doing great damage to flour in a warehouse in the East of London. Mr. A. G. Butler contributed a paper “On the species of the Lepidopterous genus *Euchromia*; with descriptions of new species in the collection of the British Museum.” Lord Walsingham communicated a note substituting the generic name *Homonymus* for the generic name *Ankistrophorus*,—which was preoccupied,—used in his “Revision of the genera *Acrolophus* and *Anaphora*,” recently published by the Society. Mr. Waterhouse announced that at the December meeting he would exhibit a series of diagrams of wings of insects, and make some observations on the homologies of the veins.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 27th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Messrs. C. E. M. Ince and W. H. B. Fletcher, M.A., were elected members of the Society. Mr. C. A. Briggs exhibited dwarfed forms and varieties of *Lycæna corydon*, taken this year. Mr. C. E. M. Ince, a variety of the underside of *Argynnis paphia*, having a black blotch on the centre of the left superior wing. Mr. Sheldon, living larvæ of *Eupithecia expalli-*

data, and *Aphomia sociella*; and a discussion ensued as to the hybernation of this species in the larval stage. Mr. Tutt, a cocoon of *Saturnia pavonia*, having two exits, there being only one pupa inside. Mr. Tutt stated that Mr. Clark, of Hackney, had met with a similar pupa of *Bombyx trifolii*. Mr. Robinson, who was present as a visitor, *Tapinostola fulva*, *Plusia chryson*, and a specimen of *Noctua*, which was said to be probably a variety of *Orthosia upsilon*, Borh. Mr. R. South said, that after a close examination of the specimen of *Zygæna lonicerae*, with apparently four antennæ, exhibited at the last meeting, he had found Mr. Tugwell's suggestion that the extra pair was simply the pupa-cases of the antennæ was correct, the only parts of the insect free of the pupa-case being the legs and antennæ. Mr. S. Adkin read "Notes on Collecting at Eastbourne during August and part of September." At the close of the paper a discussion took place, in which Messrs. J. J. Weir, Sheldon, Tutt, Cooper, Carrington, Tugwell, Wellman, and Billups took part.

Nov. 10th, 1887. The President in the chair. Messrs. A. M. Keay, J. H. A. Jenner, and A. Robinson were elected members. Mr. J. A. Cooper exhibited a curious form of *Hadena dentina*, red forms of *Noctua glareosa*, and *N. castanea*; also a series of *Tephrosia biundularia*, from Derby. Mr. Oldham, a strongly marked variety of *Noctua baia*. Mr. Tugwell, English, Scotch, and Irish forms of *Boarmia repandata*. M. J. A. Clark, bred specimens of *Polyommatus phleas*, with preserved larvæ, and contributed notes. Mr. Goldthwaite, bred *Pericallia syringaria*. Mr. Mera, varieties of *Arctia caia*, bred from ova hatched in June. Mr. Kenward, varieties of *A. caia*, one specimen having yellow hind wings. Mr. H. H. Druce, a melanic variety of *Vanessa urticae*, taken at Mexico. Mr. Sheldon, a series of about twenty-five *Tephrosia biundularia*, from Derbyshire, and contributed notes. Mr. Tutt, specimens of *Dianthæcia compta*, from Germany, and a variety of *D. nana*, closely approaching *D. compta*. Mr. West (Greenwich), *Dytiscus marginalis*, *D. circumflexus*, and *D. punctulatus*. Mr. Billups, *Astynomus ædilis*, from Chobham; *Strangalia aurulenta*, from Warnham, and *Nebria complanata*. Mr. Tutt read a paper on "Darwin's Theory of Hybridism and Mongrelization," which was followed by a long discussion in which Messrs. Jenner Weir, Carrington, and others took part.

November 16th. Annual Exhibition.—The Exhibition was held at the Bridge House Hotel, and notwithstanding the dense fog which prevailed was attended by about 1000 persons. There were exhibits in all branches of Natural History, and during the evening the Sciopticon Company gave two displays of photo-micrographs by the Sciopticon lantern. Among the principal entomological exhibits were those of Mr. R. McLachlan, European Trichoptera, Ant-lions, Ascalaphus, Nemopteridæ, &c., and European Psocidæ. Mr. S. L. Mosley, cases showing the life-history of the Hessian Fly, *Cecidomyia destructor*, &c.; Orthoptera by Mr. Eland Shaw and Dr. Sequeira; Exotic Coleoptera by Mr. F. Grut and Mr. Epps, the latter showing a box of the West Indian and South American weevils which attack the cocoa-bean (*Theobroma cacao*), British Coleoptera being represented by Mr. T. R. Billups' collection, contained in sixteen drawers, and by Mr. Cripps, Mr. G. A. Lewcock showing the Donacia and Longicornia, Messrs. C. H. Morris and J. H. A. Jenner also exhibiting in this order. Diptera, Hemiptera and Hymenoptera were also shown by Messrs. Billups and Jenner. Mr. Bignell, an interesting case of galls. In the Lepidoptera the exhibits were more numerous, exotic species being exhibited by Messrs. J. Jenner Weir, S. Edwards, E. Cooke, Frohawk, Dannatt, Malyon, and the Zoological Society of London, the last-named with specimens reared in the Insect House in the Society's Gardens. Among the British Lepidoptera were the exhibits of Mr. Elisha, twenty drawers containing his collection of Tortrices, Tineæ and Pterophori, a most interesting show. Mr. Adkin, a long series of the white form of the male of *Spilosoma mendica*; also *Ephestia kuhniella*, with flour affected by the larvæ of this species. The genus *Lycæna* was represented by the exhibits of Messrs. C. A. Briggs, A. B. Farn, T. W. Hall. E. Sabine, R. South, S. Webb, and others, Mr. A. H. Jones exhibiting two drawers of European species. The whole formed a most interesting exhibit, and it is not often that such a collection of forms and varieties of this genus can be seen together. Mr. Sabine's box attracted much attention. Mr. J. A. Clark, a most interesting case of *Zeuzera pyrina* (*æsculi*) containing many good varieties; also two drawers from his fine collection. Mr. J. A. Cooper and Mr. S. Stevens showed their collections of Rhopalocera, the latter gentleman's containing a number of varieties and the specimen of *Melitæa eos* taken in

1802. Mr. Machin, a fine drawer of *Peronea hastiana* and *P. cristana*, principally the latter. Dr. Sequeira, a case of insects taken in his garden at Hackney. Mr. C. H. Morris, *Acidalia immorata*, &c. Mr. Boden, a pocket box of Micro-Lepidoptera, containing many rare species and varieties, the most interesting being a variety of *Ennychia octomaculata*, and a species which was not identified. Mr. South, comparative series of *Noctua brunnea* and *N. festiva*, including var. *conflua* from various localities, and a case of *Boarmia repandata* from many localities, including all the named varieties. Mr. Tutt, comparative series of Agrotidæ and European Zygænidæ. Mr. Howard Vaughan, two drawers of *Cidaria truncata* and *C. immanata*. Mr. Eedle, life-histories, the larvæ being mounted on the natural food-plants. Mr. Jager, *Callimorpha hera*, &c. Mr. Tugwell, his collection of Noctuæ. Mr. Wellman, three broods of *Acidalia rubricata*, many species of Pterophoridæ, &c. Mr. C. H. Williams, a case of preserved larvæ. Mr. G. Baker, larvæ and imagos of *Eupithecia venosata*, *E. satyrata*, *E. curzoni* and *E. nanata*. Mr. R. E. Salwey and Mr. Blackall, many interesting series of Macro- and Micro-Lepidoptera. Among the other exhibitors in this order were Mrs. Hutchinson, Messrs. Barren, Croker, Dobson, Druce, Goldthwaite, Helps, Jenner, Joy, Lamplough, Levett, P. Russ, Stringer, Dr. Rendall, &c. Messrs. Neighbour and Son exhibited bee-keeping appliances, and there was a good display of microscopic objects, the Society being assisted by the Quekett, South London, and Hackney Microscopical Societies.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The first conversazione and exhibition of objects of entomological interest was held by this Society on Monday, October 31st, in the Society's meeting-room, in the free library, William Brown Street, Liverpool. The number of members and friends was very satisfactory, there being over one hundred present. The President, Mr. S. J. Capper, F.L.S., delivered an address explaining the aim and object of this Society. Having alluded to the library of the Society, he advocated the placing of type collections of insects, such as his own educational collection, in all our schools, so that children might be taught to take an intelligent interest in our insect fauna. Mr. C. H. Walker delivered a lecture on

“Ten Minutes dabbling in a Stagnant Pool,” giving an account of its insect inhabitants, their habits and transformation. Dr. J. W. Ellis gave a sketch-lecture on “The Mouths of Insects,” comparing the mouth-parts of a bee, a beetle, and a butterfly. On the tables were placed a number of interesting exhibits. By the President, Mr. S. J. Capper, five drawers forming an educational collection of insects, and a drawer of *Lycænide* containing extraordinary varieties of the under sides. The Rev. H. H. Higgins, British Syrphidæ. Mr. C. S. Gregson, two drawers of varieties of *Abraxas grossulariata*; these drawers excited great attention, being said to have been picked from over a hundred thousand bred by the exhibitor. Mr. F. N. Pierce, a drawer showing various modes of setting, and a selection of British Lepidoptera showing the larva and perfect insect of each species; also a case showing Irish cream-coloured *Arctia mendica*, compared with the ordinary form; and a series of several species showing range variation. Dr. W. J. Ellis, British Lamellicornes and Chrysomelidæ; in the latter drawer was a full series of *Chrysomela cerealis* taken by himself on Snowdon. The Hon. Secretary, Mr. R. Wilding, drawers of British Coleoptera; this exhibit was greatly admired for the exceedingly neat way in which the beetles were arranged, and as containing many rare species. By the courtesy of the Rev. H. H. Higgins and Mr. T. J. Moore, selections from the British and European collections of Lepidoptera bequeathed to the city by the late Nicholas Cooke. Mr. W. Johnson, a drawer from his cabinet containing the genus *Lithosia*, and some good varieties of *Arctia caia*; also boxes containing specimens of all species in the genus *Plusia* and *Dianthæcia*. Mr. R. W. Hughes, a drawer containing representatives of insects captured during the year around the district of Liverpool. Mr. C. H. H. Walker had beautiful illustrations of insects taken from life, drawn by himself. Mr. J. Mackintosh, curious old entomological books; while round the room were distributed various apparatus useful in the collection and preservation of insects, exhibited by B. Cooke and Son, of Liverpool. Microscopes were exhibited by Mr. J. C. Thompson and other members.—F. N. PIERCE.

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EDWARD A. FITCH, F.L.S., F.E.S.

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“ By mutual confidence and mutual aid

Great deeds are done and great discoveries made.”

POPE'S '*Homer*.'

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—
1888.

“ Beauties of Nature,—the passion of my youth,
Nursed up and ripen'd to a settled love,
Whereto my heart is wedded.”

ROBERT SOUTHEY.

“ What more felicitie can fall to creature,
Than to enjoy delight with libertie,
And to be lord of all works of Nature?
To reigne in th'aire from th'earth to highest skie,
To feed on flowers and weedes of glorious nature?
To take whatever thing doth please the eye?
Who rests not pleasèd with such happiness,
Well worthy he to taste of wretchedness.”

EDMUND SPENSER.

“ All nature is but art, unknown to thee ;
All chance, direction which thou cans't not see ;
All discord, harmony not understood.”

ALEXANDER POPE.

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POST-GLACIAL INSECTS.

BY ALFRED BELL.

IN a recent number of the 'Entomologist' a question has been raised touching the succession in post-glacial times of certain species of *Lycæna*. So far as my own experience goes, insect remains are by no means common, and chiefly pertain to the Coleoptera. Of the thirty species given in the sequel, nearly all belong to this division of the insect world. It does not follow that Lepidoptera were not present during the post-glacial period, since they occur in beautiful preservation in deposits of much older date, both in England and on the Continent, but rather that the nature of the post-glacial soils is not favourable to their preservation, they being mostly gravel, peat, or marine muds and clays, inimical to the preservation of soft-bodied animals. Hence, if anyone knows of Lepidoptera retained in a fossil state, it will be of real service to Science if he will say where they were found, and under what conditions.

The proposition that one of the species came south, from Scandinavia, by way of Scotland, when these two countries, but not South Britain and the Continent, were united, is one that no student of post-tertiary geology will admit, geological facts being against such geographical arrangements.

It is a pity that in lists of fossils from the various peat and other deposits, nothing more definite than "elytra of Coleoptera" is usually recorded, because careful nomenclature would materially aid in determining the geological horizon in which such remains occur; *e. g.*, the peat at Lexden, near Colchester,

has yielded seven or eight species, all of which are at the present day Trans-Pyrenean, enabling us to correlate the Lexden peat with a marine deposit near Chichester, in which about a dozen of the shells are Lusitanian.

In the following lists I have quoted all the forms that have come under my notice, either by reading or personal research. It is probably incomplete, and I hope other and more experienced entomologists will fill up the gaps. For convenience I have placed them alphabetically.

POST-TERTIARY INSECTS.

Atopa cervina, Cambridge peat; *Agabus bipunctatus*, Cambridge peat; *Buprestis*, sp., Lexden; *Byrrhus*, sp., Mundesley; *Carbera nitens*, Garvel Park; *Cassida*, sp., Lexden; *Chrysomela*, Lexden, and Bielbecks, Yorkshire; *Cimex*, sp., Ulverstone; *Coccinella*, sp., Lexden; *Copris lunaris*, Mundesley; *Cossyphus*, sp., Lexden; *Curculio*, sp., Lexden; *Cyclonotum orbiculare*, Cambridge peat; *Donacia crassipes*, Mundesley; *D. linearis*, Norfolk Forest bed (pre-glacial), and Mundesley; *D. sericea*, Mundesley; *Dytiscus*, sp., Crofthead, in Glasgow; *Elatior linearis*, Mundesley; *Geotrupes*, sp., E. Scotland, in peat; *Harpalus ophonus* vel *argutor*, Mundesley; *Lacon murinus*, Mundesley; *Licinus*, sp., Lexden; *Notiophilus aquaticus* vel *palustris*, Arctic bed, Ostend, Norfolk; *Otiorhynchus*, sp., Garvel park, Clyde; *Pterostichus madidus*, Norfolk Forest bed; *Silpha dispar*, Norfolk Forest bed; *Timarcha*, sp., Norfolk Forest bed; *Dicera* (allied to *Tipula*), in a Crannoge, Wigtonshire; *Neuroptera* (traces of), Fen peats; *Phryganea* (cases of Caddis Fly), Lewes Levels.

140, Lower Marsh, Lambeth, London.

ENTOMOLOGY OF DELAMERE FOREST.

By J. ARKLE.

FROM the Northgate, Chester, to Delamere, is ten miles by rail. In a few minutes we find ourselves at Delamere Station, from which the forest stretches to right and left, with a length of eight miles and an average breadth of three miles. Here and there we come upon a solitary habitation, or on a hamlet

with cottages thatched, and with whitewashed walls. From the Station the forest road stretches beyond the railway bridge to Hatchmere, a mile or so away. The road divides this part of the woods into sections of an opposite character. On the right the ground rises away with hill and hollow. The trees are chiefly oaks, and we leave the turnpike and wend our way, net in hand, among them. Were it spring-time we should find on the bark, *Pachnobia rubricosa*, a few of the commonest of the family *Tæniocampa*, such as *T. gothica*, *T. incerta*, *T. stabilis*, and *T. pulverulenta*, and *Amphidasys strataria* as a rarity; while we should capture *Hybernia leucophearia*, *H. marginaria*, *H. defoliaria*, and *Larentia multistrigaria*, with the aid of the net. But in July we only come across *Acronycta psi* and *Aplecta nebulosa*. The latter rests by day on the oak trunks, and its long, triangular shape can be seen a score or more yards off. In October, the same tree trunks are haunted by *Agriopis aprilina* and *Oporabia dilutata*.

Here are accidentally met two brethren of the net. They are strangers who have come from a long distance, having heard of the fame of the forest. At our invitation they join us, and we cross the road into the section of the forest on the left. The ground dips down into a broad and wooded valley, crossed at right angles by wide, deep ditches, some of which are full of nearly stagnant mud and noisome water. The trees in the drier portions are chiefly Scotch firs, and among the branches, in the hot sun, flit and sport innumerable *Bupalus piniaria*. There is, especially on the low-lying ground, an undergrowth of birch, and beneath this a carpet of heath and fern, of bilberry and moss. Among the firs, and from the ground, we occasionally raise *Eucosmia undulata* and in plenty, *Macaria liturata* and *Ellopiæ prosoparia*. The larvæ of the two last—with *B. piniaria*—can be beaten from the fir branches in September and October. Beat them with a long stick, and hold underneath an inverted umbrella. Before we leave the drier ground, with its pines, we disturb two or three *Noctua castanea*, and box them.

Among the birches, with their taller companions, the pines, are occasional clear spaces, where heath and wild flowers grow luxuriantly. Here we come upon the quiet little *Thecla rubi*, in its short trips among the herbage. There is a *Noctua* tasting the sweets of the heath blossoms. It is *Agrotis strigula*. We dive

in among the birches and beating commences, not for larvæ but for *Geometra papilionaria*. We form a line in which we stand, sportsman-like, some ten yards apart. We advance slowly, taking care to mark our path, and beat as we go. In addition to good luck with *G. papilionaria*, many other Lepidoptera are captured, as *Drepana falcataria*, *Lophopteryx camolina*, *Metrocampa margaritaria*, *Boarmia gemmaria*, *Asthena luteata*, *Acidalia bisetata*, *A. aversata* (with the banded form), *Cabera pusaria*, *Fidonia atomaria* in profusion, *Emmelesia alchemillata*, *Thera variata* var. *obeliscata*, *Hypsipetes sordidata*, *Melanthia ocellata*, *Melanippe rivata*, *M. galiata*, *M. montanata*, *Coremia designata*, *C. ferrugata*, *C. unidentaria*, *Cidaria corylata*, *C. truncata* (*russata*), *Larentia viridaria*, and *Camptogramma bilineata*.

The birches are prolific when beaten in the daytime for larvæ; and the umbrella again comes in useful. Among the captures are *Drepana falcataria*, *Dasychira pudibunda*, *Notodonta dromedarius*, *Acronycta psi*, *A. leporina*, *Amphidasys betularia*, and *A. strataria*. There are also ladybirds of few spots and many spots; while among beetles *Carabus violaceus* is a terrible fellow among the pupæ at oak roots, and, as we break up a rotten log, we find larvæ of *Rhagium bifasciatum*.

At last the birches are left behind, and we make for the forest lake of Hatchmere. As we plunge breast-high through the tall ferns we net fresh specimens of *Cidaria populata*. Here and there in the forest openings, *Pieris brassicæ*, *P. rapæ*, and *P. napi* float about like big snowflakes out of season, *P. napi* being especially abundant, and they form a pleasing contrast to the surrounding greenness. On one side of the mere is a moss with awkward bogholes, and there is a patch of the cotton grass. The little blue butterflies chasing each other, and almost entirely confined to this small area, are *Lycæna ægon*. *L. icarus* is met with as we pick our way, when the first *Nemeophila russula* rises from the heath. One of the party secures three males and an equal number of females. By-and-by there are numbers of *Polyommatus phlæas*, and, as the ground gets drier, a few *Zygæna filipendulæ*, in metallic green and scarlet, sail over the trefoil. There is some surprise that we have not met with *Cænonympha typhon*. Tradition has it that this butterfly was once to be seen on this likely-looking heath. It still haunts the neighbourhood, but much farther afield. We

pay a visit to its ground, and find *typhon*—many on the wing—with a few just emerged, and drying their wings on the grass stems. Here and there are firs and birches, between which three or four *Saturnia pavonia* madly wing their way in the blazing sun. One of us picks up a fine specimen of *Arctia fuliginosa*, another a larva of *Bombyx rubi*. A few *Anarta myrtilli* and *Aspilates strigillaria* fall to the nets; and, at last, the setting sun and tired limbs proclaim that sport must close for the day.

2, George Street, Chester, October 18, 1887.

TORTRICES AND CRAMBI TAKEN IN 1887.

BY A. THURNALL.

IN looking over my diary I find that I have taken and bred 127 species of Tortrices in the season of 1887, of which the following are perhaps most worthy of notice:—

Tortrix diversana. Bred one female from a lot of larvæ rolling up the elm leaves; all the others produced *T. xylosteana*.—*T. branderiana*. Two specimens at rest on an aspen at Wanstead.

Dichelia grotiana, which is usually not rare, was represented by two specimens only.

Ditula semifasciana. Seven beaten from willow bushes, July 17 and 24.

Penthina capreana. One beaten from the same bushes.—*P. sellana*. Two or three netted, May 17th. This is a very obscure species, and might be very easily passed over as a common *Dicrorampha*.

Antithesia salicana. Not rare on the willow trees round Hackney Marshes. I have not been able to find the larva yet.

Spilonota laricana. Several beaten from larch, July 3rd.

Sericoris bifasciana. Common in the neighbourhood of Wanstead at the end of June amongst Scotch fir.—*S. littoralis*. Very common amongst sea thrift at Shobery, August 8th.

Euchromia purpurana. I found the recently discovered larvæ of this species not uncommonly where I met with the moth two years ago. They feed on the roots (externally) of *Sonchus arvensis* and *S. asper*.

Sciaphila sinuana (St.) One specimen at rest. The late Mr. Sang once bred it from a larva found feeding in flowers of the bluebell. And this plant was growing in great abundance where my specimen was found. I hope to meet with the larva next season.

Clepsis rusticana. Was not uncommon early in June in Wicken fen.

Phocopteryx paludana also occurred there at the same time.—*P. lactana*.

A few at rest on aspen trunks. Not met with before in this neighbourhood.—*P. mitterbacheriana*. Bred rather freely. The larva was particularly common this autumn.

Grapholitha nisana. Fairly common and variable as usual; at rest on aspens.—*G. minutana*. One female, also at rest on aspen, July 10th; the first I have taken.

Phlæodes immundata. Very uncommon this season.

Pedisea oppressana. Very common, but local, resting on poplar trunks, July 2nd.—*P. occultana*. Rare. Beaten from larch when collecting *lariciana*, July 3rd.

Ephippiphora nigricostana. Larvæ very common in roots of *Stachys*.—*E. gallicolana*. Bred freely from galls collected in the winter.

Semasia janthinana. Eleven bred from larvæ found feeding in the fruit of the hawthorn in October, 1886. They prefer bark to pass the winter in.

Coccyx nigricana. Beaten freely from a single tree, *Pinus picea*, on which the larva feeds. I have not heard of its capture in Essex before. Although in all our lists this species is put in the genus *Grapholitha* (Tr.), it is really quite out of place, coming very close to *Coccyx hyrciniana* and *C. distinctana*.

Retinia pinicolana. One only beaten from Scotch fir. *R. buoliana* was common.

Opadia funebrana. From something like eighty larvæ now all safely hidden away in some rough bark, I hope to breed at least a series.

Stigmonota internana. The male swarming over the furze bushes; the female was much more sluggish.—*S. weirana*. A fine series bred; but the larva was not so common this autumn as it was in 1886.—*S. germerana* (Hb.). Not rare amongst some scrubby oaks. The larval habits are as mysterious as ever. I have looked in vain for it this autumn in a locality where the imago is common.—*S. roseticolana*. Bred freely from larvæ feeding in rose "hips." They prefer pieces of bark or dead bramble twigs to hibernate in.

Dicrorampha consortana. Bred sparingly from ox-eye daisy.

Catoptria albersana. Bred June 3rd from one of several larvæ found feeding in folded leaves of honeysuckle, September 23rd, 1886. The larvæ passes the winter in its "vaulted chamber," and pupates a short time before emerging.—*C. candidulana*. In its usual abundance amongst its food-plant, *Artemisia maritima*.

Eupacilia maculosana. Larvæ common in unripe seed-heads of the wild hyacinth.—*E. ambiguana*. Bred from New Forest larvæ.—*E. rectisana*. Swarming in the "Salterns," and a few *affinitana*.—*E. implicitana*. Not uncommon amongst *Anthemis cotula*, in the immediate neighbourhood.

Argyrolepis zephyrana (Tr.) Taken on the wing, and bred from roots

of *Daucus carota*; very subject to *Ichneumons*.—*A. badiana*. Netted in July; but I failed again to breed it, although *P. lappella* came out in its usual abundance.—*A. aneana*. Bred from two localities in the county of Essex, and no doubt occurs in many places if well looked for.

Conchylis smeathmanniana. A single female emerged June 14th, the sole results from fifty or more larvæ. I afterwards found it swarming, August 6th, over *A. cotula*.

I found no rare species amongst the Crambi; but may just mention *Platytus cerussellus*, *Crambus pascuellus*, *C. perlellus*, and vars.; and one female of Mr. Tutt's new species, *C. contaminellus*, taken at Shoeburyness, August 8th. Many eggs were laid, and the larvæ are now apparently hibernating in silken tubes, mixed with sand, &c., at the grass roots.

Homæosoma sinuella. Fairly common.—*H. ninbella*. Amongst *Anthemis cotula*, in the flower-heads of which plant the larvæ were feeding.—*H. binavella*. Two bred from thistle-heads gathered September, 1886.

Cryptoblabes bistriga. Larvæ common in one place on oak, October 6th and 7th.

Rhodophæa formosa. Larvæ very common on elm in September and October (beginning).—*R. advenella*. Only one larva found this year.

177, Major Road, Stratford New Town, E., November 16, 1887.

NOTES ON THE JAPANESE SPECIES OF SILPHA.

BY GEORGE LEWIS, F.L.S.

THREE of the eleven species in my collection appear to be new, *viz.*, one species similar to *S. 4-punctata*, Linn., and two others somewhat similar to *S. thoracica* of the same author. Of the others, five are known as European, and four of these are common in England. Although eleven species may seem at first to be a few for Japan, I think the list is likely to be found fairly complete, as the conditions of life which are favourable there to saprophagous insects are limited. The crows and the foxes, and after them the ants, are very effective scavengers; and it is only on the coasts and in the populous districts that the pabulum necessary for the larvæ and imagos is sufficient, and where the species occur they for the most part congregate together, and easily fall into the hands of the collector. The peculiar species in Japan are, however, forest species, and pupate under bark, and new discoveries may be made eventually of species with similar propensities.

Silpha atrata, Linn., and *venatoria*, Harold, feed on snails; the former occurred at Hakodate, accompanied with *Cychnus convexus*, and eating *Helix pauper*, Gould. Dr. L. Von Heyden considers *S. sex-carinata*, Motsch., described from the Amur, to be a variety of *S. 4-punctata*, Linn.; and there is certainly nothing in Motschulsky's description to lead to an opposite opinion.

1. *Silpha japonica*, Motsch.; Etud. Ent., 1860, p. 12.—Is abundant on the coasts of all the islands, and in China.

2. *Silpha brunnicollis*, Kraatz; Deutsche Ent. Zeit., xxi., 1877, p. 106.—This species does not appear to extend north of Yokohama, but it is abundant in Kiushiu. All the specimens I found at Yokohama have the disc of the thorax black. It is found in Formosa and China.

3. *Silpha venatoria*, Harold; Deutsche Ent. Zeit., xxi., 1877, p. 346.—Seven examples were found at Subashiri near Fujisan, in May; and I bred it in September from pupæ found in rotten birches at Hakodate. Some specimens were also found in Sado.

4. *Silpha perforata*, Gebler; Nouv. Mém. Mosc., 1832, p. 49.—This Eurasian species is common in Yezo.

5. *SILPHA SILVATICA*, n. sp.—Oblongo-ovata nigra; thorace lateribus testaceis; elytris testaceis 4-nigro punctatis. L. 16-17 mill.

This species in general coloration agrees with *S. 4-punctata*, but it is one-third larger, and the elytral carinæ are longer and much more distinct. In *S. 4-punctata* the posterior black spot does not reach beyond the third carina; in *silvatica* the spot is more transverse and much larger, and one-third of its area is outside the third carina. In some specimens the dividing portion of the carina is yellow, and in others black. The head in the region of the eyes is one-third wider than in the Linnean species, and the prosternum is more finely acuminate posteriorly. One specimen was taken at Chiuzenji, and twelve others beaten off oaks at Junsai and Sapporo.

6. *Silpha sinuata*, Fab.; Syst. Ent., p. 75.—Von Harold has identified this species as occurring in Japan, and says the specimens (Deutsche Ent. Zeit., xxi., p. 346) are much larger than European examples. Some I possess are double the size, but I do not think they are specifically distinct. The form or species is very abundant everywhere, especially on the sandy coasts.

The synonymy of this insect—if ever worked out—will probably include more names than those given in the Munich Catalogue.

7. *Silpha rugosa*, Linn.; Fn. Suec. nr. 455.—This species is rare in Japan. In 1869 I obtained two specimens from Simabara, and one at Yokohama; and in 1880 I took three specimens on the sand-hills at Hakodate. On each occasion it was associated with *sinuata*, Fab.

The outlines of the three following species are very similar:—

8. *Silpha thoracica*, Linn.; Syst. Nat., ii., p. 57.—I bred this from two pupæ found under bark at Sapporo, and obtained two others by beating foliage. The specimens in no way differ from British examples, except in the interocular tubercle referred to below.

9. *SILPHA SUBRUFa*, n. sp.—Breviter ovata; præcedenti similis; thorace rufo; elytris punctatis obscuro-rufis. L. 13 mill.

This species is very similar to *S. thoracica*, Linn. The elytra are relatively shorter, more or less rufous, and punctured throughout clearly and distinctly. There is no appearance of the corrugation or rugosities which are well-marked characters in *thoracica*, especially in the margins of the elytra. In *subrufa* there is a small tubercle between the eyes, which is not very well defined in the Japanese specimens of *thoracica*, but I have found it in an English example of the latter. Taken at Chiuzenji, Akita, and Sapporo. One specimen, bred from a pupa found in a rotten birch in August.

10. *SILPHA NIGROPUNCTATA*, n. sp.—Breviter ovata; thorace rufo, glabro, nigro-4-punctata. L. 13-14 mill.

This insect differs from the preceding in three important characters:—The thorax is free from hair or pubescence; with four black spots on its disc, arranged thus .'.; and the elytra are black, as in *thoracica*. *Silpha tetraspilota*, Hope, has similar thoracic spots; but Hope's species is altogether a different insect. Five specimens taken at Nikko, Miyanoshita, and Samegai.

11. *Silpha atrata*, Linn.; Fn. Suec. nr. 451.—Seven examples, taken in S. Yezo; the individuals are a little larger than English specimens.

NOTE.—*Necrophorus plagiatus*, Ménét, 1854; *Ptomascopus 4-maculatus*, Kraatz, 1877; *P. davidis*, Fairm., 1878; and *P. plagiatiennis*, Lewis, 1879, are names of one species. Kraatz

was in error when he wrote, *Deutsche Ent. Zeit.*, xxi., p. 104, "*elytris autem rufobimaculatis.*" Each elytron has one red mark. I write this on the authority of Monsieur Antoine Grouvelle, who has seen the specimen from which Dr. Kraatz drew his description, in the collection of the late Count Mniszeck.

Wimbledon, September 19, 1887.

PROPOSAL FOR A NEW ENTOMOLOGICAL SOCIETY.

BY CORYNDON MATTHEWS, F.E.S.

SOME little time ago, on taking up a number of the 'Entomologist,' my attention was arrested by the motto which appears on the cover, and which no doubt I had seen each month since I first became a subscriber to the magazine, though it had never before attracted my notice. The motto states a general fact, of which there can be, of course, no doubt, though I think it is one particularly applicable to students of any branch of Natural History. On thinking over the principle of "mutual aid," an idea occurred to me which I should now like to put before the readers of the magazine; for it seems to me that although entomologists are, as a rule, a good-natured set of individuals, and generally ready to render each other assistance, yet an immense deal more might be done, by a little organisation, to carry out the mutual aid principle than has yet been attempted in this country.

In the first place, I should like to point out a few of the difficulties which frequently meet working entomologists, particularly beginners, those who are living in the country, and also those who are working at the more rarely studied orders of insects; and in the next place, to make a few suggestions towards a scheme which I think would tend materially to diminish them.

First then for the difficulties. Nearly every entomologist at some time or another during the year makes an excursion from his home, if only for a few days, with a view of prosecuting his favourite pursuit; but as soon as he has settled into the quarters decided on, presuming him to be a stranger to the locality, his troubles begin. He will, of course, desire to know which localities in the neighbourhood should be worked, and which would not repay him for the trouble; what literature

on the entomological fauna of the district exists; and if he can ascertain this, how he can manage to see or obtain it. Again, those beginning entomological work, who reside in the country, and have rarely an opportunity of meeting and consulting with other entomologists, frequently find great difficulty in ascertaining the names of many of the species they take, and become disheartened and discouraged, when a few minutes' conversation, or the inspection of their specimens by some one more advanced in the science, would effectually clear up all doubts.

So much for the difficulties; and now for my proposals for their removal. I would suggest that a new entomological society should be formed, to be called the London and Country Entomological Association, or with some title which would sufficiently distinguish it from the Entomological Society of London.

That the officers of the Association should consist of a President, Hon. Treasurer, and Hon. Secretary, and a small Committee of three or four persons resident in London.

That the subscription to the Association should be a nominal one (say 5s. per annum), and merely sufficient to cover the cost of printing and the hire of a room for meetings.

That bi-monthly, monthly, or quarterly meetings, should be held in London.

That country members should be entitled to take *or send* a limited number of specimens to any meeting of the Association, when they could probably be named by some one present.

That in each county some working entomologist should be appointed to act as Hon. Secretary for the county, and that such Secretary should endeavour to ascertain what literature there is bearing on the entomological fauna of the county, and where such literature can be inspected; that he should also obtain as many members as possible for the Association, and annually prepare a list of these, with their addresses, and with the subjects at which each is working, and that the Secretaries should also collect the subscriptions in their counties and remit them to London.

That the County Secretaries should be Honorary Members of the London Committee.

That at the beginning of each year the Committee should publish a list of members by counties, giving the address of each member, and stating the subjects at which he is working; such list to be furnished to every member free.

That on joining the Association each member should undertake to assist any other member by advice or information.

In conclusion, I would state that my idea of appointing County Secretaries is that this would materially lighten the work of the London Committee, and at the same time give these gentlemen an excellent opportunity of compiling a complete entomological fauna of their county. The suggestion for the publication of a list of members, with a record of the particular branch of Entomology which they are studying, is adopted from the annual report of the Société Française d'Entomologie. I need scarcely say that I am sure these suggestions can be readily improved on and supplemented, and that they will be accepted as only intended to elicit opinion as to whether such an Association as I have proposed could be practically formed and worked.

Erme Wood, Ivybridge, S. Devon, December 1, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN CUMBERLAND.—Mr. Watson, of this village, who is not an entomologist, took a fine specimen of *C. edusa* in a field near here in August last. I have not previously seen this species with us for about ten years.—H. MURRAY; Lowbank Villas, Carnforth, Nov. 11, 1887.

VANESSA ANTIOPA WITH WHITE BORDERS.—I can endorse the statement of your correspondents (Entom. xx. 135, 156, 228), that the white border of *V. antiopa* is due to the fading of the yellow. Nearly all the hybernated specimens which I have captured here have white borders.—J. WARBURG; Villa Raphael, Cannes, December 8, 1887.

VANESSA ANTIOPA IN OXFORDSHIRE.—On August 14th last, in the woods at Nuneham Courtney, I saw a beautifully fresh specimen of *Vanessa antiopa* with yellow-bordered wings, evidently a Briton born and bred. I could not capture it, not having a net with me at the time; nor had I the wish to do so. Perhaps if *V. antiopa*, *Sphinx convolvuli*, and other rarities were not captured and slaughtered whenever seen by thoughtless collectors, they might again become as plentiful in England as they were of yore.

I sincerely hope that the energies of real entomologists will, ere long, be devoted to the preservation rather than the extinction, of rare and beautiful species. — W. J. HERMANN NEWMAN; 15, Park Crescent Oxford.

[It would appear highly improbable that collectors of insects see all the specimens of rare species in any one season, or that they even have opportunity of observing a thousandth part of what appears each year.—J. T. C.]

HERMAPHRODITE *LYCÆNA CORYDON*.—On Saturday, 30th July last, I captured at Blandford a distinctly hermaphrodite *Lycæna corydon*. The right pair of wings and half the body are male, the left female. I may mention that the insect has been inspected by several entomologists in the neighbourhood.—C. B. SMITH; 58, Rectory Road, Stoke Newington, London, N.

LYCÆNA CORYDON AWAY FROM CHALK.—In a note under this heading (Entom. xx. 265) Mr. J. Jenner Weir shows that *L. corydon*, although almost entirely confined to chalky soils in England, is by no means so particular on the Continent. An exactly parallel case occurs in *Helix pomatia* (the edible snail), which in England occurs only on the chalk, but in more southern latitudes is found on all sides, and in Germany is all-prevalent, to the exclusion of the commoner species in this country, *H. aspersa*. This fact has been said to be due to the greater amount of heat absorbed by limestone, and the consequent suitability of this soil for species in the most northern part of their range, while in hotter climates no such influence would be necessary. Whether this is so, and whether it holds good also in the case of the *Lycæna*, I cannot tell, but call attention to the similarity of the two cases with a view to furthering the solution of the problem.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, U.S.A., November 2, 1887.

LYCÆNA CORYDON AWAY FROM THE CHALK.—When collecting as a lad some twenty-five years ago, I used to find *Lycæna corydon* on the great oolite formation in a few localities: one of these I visited not long since, and was pleased to find this butterfly still in existence there. There is no chalk anywhere near for many miles and not in the same county. The spots are somewhat isolated and the area restricted, and the insect apparently has never extended its range. All entomologists who

have had opportunities of observing will be aware that all of the genus *Lycæna* found on the chalk are also found at times on some of the limestone formations. In this district, as an instance, we find *Lycæna minima* here and there on the mountain limestone, and it is well known to be abundant on the chalk. *Lycæna arion*, Newman states as being on the chalk in Wilts; and it is well known that one of its chief habitats was the Cotswold Hills, on the öolite, until the species was nearly exterminated in some places. So also with *Lycæna bellargus* of the present, and *Lycæna semiargus* of the past; both being found on the chalk and limestone. I suppose where the food-plant elects to grow there may probably be found the insect which feeds thereon. No doubt the *Lycænae* were at one time more abundant on the limestone, but as a rule these districts have been much more cultivated,—one does not find the beautiful stretch of downs of the chalk districts. — T. B. JEFFERYS; Clevedon, December 5, 1887.

THE OVIPOSITING OF SPHINGIDÆ.—Do not the hawk-moths generally lay their eggs while on the wing? I have seen *Smerinthus populi* do so; also in 1886 I watched *Macroglossa fuciformis* so doing. That was the only specimen of *M. fuciformis* I have seen here, though I have watched both the flowers of rhododendron and common bugle for it; but it must be plentiful, as I took numbers of the larvæ of all sizes in 1887. I also found three ova, two of which I reared to the pupa state. On the other hand, there are generally some *M. bombyliiformis* to be seen at the flowers of lousewort in a certain field early in June; but I have never been able to find the larva. I watched one female, as I thought, ovipositing; but, though I collected and carefully searched the leaves of all the scabious plants round the spot, I could find nothing. Unfortunately the field is always made into hay, or I should have a better chance of finding them when full-grown.—C. A. SLADEN; Burghclere, Newbury.

SATURNIA PAVONIA COCOON WITH TWO OPENINGS.—It may be of interest to entomologists to hear that the cocoon of *S. pavonia* having two exits, which was exhibited by Mr. Tutt at a meeting of the South London Entomological Society (Entom. xx. 333), is not unique. I have a similar specimen of *S. pavonia* cocoon with two exits, which was spun by one of six larvæ found in the

South of France, full fed in June, 1885, from which the moths emerged in February, 1886 and 1887. This is the only instance of the kind I have met with. It would be interesting to know if the case is of frequent occurrence in this species. With regard to the *Bombyx trifolii* cocoon mentioned by Mr. Tutt, this case of *S. pavonia* can hardly be classed in the same category, as the larva of *B. trifolii* makes no regular exit to its cocoon, but leaves the moth to eat its way out. Perhaps this may be an instance of two closely adjacent cocoons, from which the two moths emerged at different ends.—J. WARBURG; Villa Raphael, Cannes, France, December 8, 1887.

CATEPHIA ALCHYMISTA. — With reference to the note of Mr. Goss (Entom. xx. 325), I had received the same information from Mr. Tugwell, and intended forwarding it to the 'Entomologist.' I have just come across one other capture by Mr. Harwood, of Colchester (Entom. viii. 185). This, therefore, brings the total up to four.—J. W. TUTT; Westcombe Park, S.E.

RUMIA LUTEOLATA VARIETY. — During the past summer season I took a fine specimen of *Rumia luteolata* with the usual markings well defined, but the ground colour is pure white. Newman does not record any variation in this species.—C. K. TERO; Kent Street, Grimsby, Lincolnshire.

NOTE ON COLEOPHORA THERINELLA. — The larvæ of these insects were unusually common this autumn on *Carduus arvensis*, and occasionally on *C. lanceolatus*, and were to be obtained in various stages of growth during the months of August, September and October. They hybernate either on the lower part of the dead thistle-stems on which the larvæ had fed, or among the grass, &c., at their roots, where they may be found during the winter months by carefully searching. Some of the larvæ do not attain their full growth till late in the spring. I once found in January no less than eighteen cases, containing the young larvæ of this insect, on a single stem. It is not an insect to rear; besides which, some years they suffer terribly from ichneumons, and I generally find that when the larvæ are most numerous there are very few indeed that escape the ravages of these pests. The young larvæ that hybernate are comparatively free from their attacks.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., December, 1887.

CIDARIA RETICULATA MALFORMED.—I bred seven *C. reticulata* last season, but they were all cripples, five being so much so that I never attempted to set them. I tried the others, and made them as good as could be expected. I think this malformation must be owing to the very hot dry summer we had, for I never bred so many cripples of various species as this season. I have again taken the larvæ, and hope to be more fortunate next year. —H. MURRAY; Lowbank Villas, Carnforth, Nov. 11, 1887.

ENTOMOLOGICAL COLLECTIONS.—We have received several further contributions upon the educational value of collections of insects. It appears to us to be useless to further pursue the question from the point of view of setting-out insects. There are a number of our readers who evidently quite agree that, for scientific purposes, it is unnecessary to set insects before placing them in collections. In that opinion we also agree, to some extent, just as we think it desirable to have a poor text-book rather than no guide. After all it must be better to have a well-set and perfect collection of insects for reference, than one where the specimens are difficult of observation on account of the distortions, and uncertainty of correctly seeing all the parts, from the cramped positions usually assumed when the specimens are allowed to arrange themselves after death. Entomologists, like botanists, have, through generations of experience, come to carefully set out specimens for observation and comparison, because such practice was most convenient. Lepidoptera are decidedly more easily observed when set out, though flat-setting seems better than that generally adopted in this country. If left to themselves, much the larger portion dry with the posterior wings either partially or wholly covered by the anterior pair. Of course it is quite scientifically correct to keep a collection of insects in spirits of wine, like Crustacea; but there are few private students who can afford space for a separate vessel for each species so arranged, neither are they so accessible; nor could we afford to wait for them to dry when it is desired to compare with nearly allied species, even if such were possible after their immersion, Lepidoptera for instance. The whole question seems to be one of students and collectors. Each is useful to the other, and a collection of specimens has no more intrinsic scientific value to an entomologist than dictionaries have

for students of philology, and the better prepared in each case the more useful to the students.—JOHN T. CARRINGTON.

SETTING RHOPALOCERA.—The method of setting the under sides of Diurni, as suggested by Dr. Percy Rendall, is quite an old style. I think the position of the legs would be greatly improved by setting them in such a position as to represent the insect when settled; as Dr. Rendall says (Entom. xx. 320), "set them as they are so often seen settled on a flower-head;" but the legs as shown in the figure to me appear to have a very dead appearance. The Hesperidæ while settled, never, I believe, make their wings meet over the back, but generally hold them about the width of the thorax apart at the tips, and the hind pair still wider apart; therefore, to represent nature, such a position ought to be imitated in the setting. I think the most effective and instructive way of forming a collection is as follows, beginning at the top of a series:—Males upper and under sides, females upper and under sides, set in the usual manner to show all the wings, then a male and female each in a settled attitude, together with ova, the larva, and pupa to end the series; a collection so arranged would be well worth the time and trouble devoted to the setting, as symmetrical setting and perfection of the specimens is the beauty of a collection.—F. W. FROHAWK; Balham, December, 1887.

THE FEMALE OF CLEDEOBIA ANGUSTALIS.—It has seemed strange to me, but twice during the last fortnight and several times before, I have had notes from correspondents referring to the fact that the difference between the males and females of *Cledeobia angustalis* was unknown to them before I sent them both sexes. As these correspondents were entomologists advanced in the study, and many series of this species in cabinets seem to consist entirely of male specimens, I think a few remarks on the species might not be out of place in the 'Entomologist.' I have occasionally captured specimens of this species in different localities, but nowhere in such abundance as on the Deal sandhills. There it sometimes occurs in countless numbers; and this summer, had it not been that my attention was specially directed to other species, I could have captured any number. The males, from dusk until quite midnight, fly freely about, *Crambus*-like, from one grass culm to another, crawling rapidly up to the top of the culm on which they settle, from whence they take a short flight to another and

generally adjacent culm, repeating these gymnastic evolutions *ad libitum*. It seems that these are the specimens that most collectors get and our writers have described. The wings of these are ample, the insect active, but easily netted. The ground-colour varies from deep blood-red, through a somewhat slaty colour to grey, but the specimens are all males. At the time that the males are flying about, if the lantern be directed to the ground, not to the marram clumps so frequented by the males, a peculiar washed-out looking insect will be observed crawling about, its colour of a pale, yellowish or orange-grey, with faint traces of a band across the centre of the anterior wings; these wings very narrow and pointed, and apparently scarcely capable of flight. The hind wings also pale, of the same colour as the anterior wings, and also very narrow. The most remarkable fact about this insect is the comparatively exceedingly large abdomen, with its long protruding ovipositor. When freshly emerged, and the ovarium distended with eggs, the insect, as it crawls over the ground, drags its abdomen after it, and does not seem to have sufficient muscular power either to raise or depress it, its weight being too great. In this condition they never appear to fly. I have seen a good many specimens, but never remember having seen one fly, although when the eggs are laid, or partly so, the female may probably have sufficient power to be able to do so. I cannot find in the books I have that the female has ever been described. All our writers describe the male, but not the female.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E., October 17, 1887.

GIANT LEPIDOPTEROUS LARVÆ IN AUSTRALIA.—In connection with the giant larva figured in the 'Entomologist' (Entom. xix. 97), it may interest some of your readers to know that larvæ of even larger proportions are found in New South Wales. The larva of *Chalepteryx collesi*, a large moth which has been unusually abundant during the past summer in the vicinity of Sydney, often attains the length of seven inches and is robust in proportion. This moth feeds on various Eucalypti, and is of a rich satiny brown colour; each segment, except the first, is furnished with eight yellow verrucose spots, which emit long brown bristles; the anal extremity, a yellow band on the first segment, and two additional verrucose spots on the second and third segments also give rise to bristles. The cocoon, as well as the

larva of this species, is armed with fine and exceedingly sharp bristles, which, if carelessly handled, readily penetrate the skin, causing considerable irritation. The larva of the beautiful swift (*Zelotypia stacyi*) measures eight inches when full grown, and I have seen several *Cossus* larvæ of similar dimensions. As Mr. Vincent Holt has asked and endeavoured to answer the question, Why not eat insects? it may not be out of place to add that in Australia the hairless larvæ of such insects as *Zelotypia*, *Itepius*, *Charagia*, *Pielus*, and many wood-boring Coleoptera—particularly Longicorns and Rhynchophora—are eaten, either raw or cooked, by the aborigines and by not a few depraved members of the white community.—A. SIDNEY OLLIFF; Australian Museum, Sydney, N. S. Wales.

SCARCITY OF INSECTS IN 1887.—I am curious to learn whether the experience of other collectors of Lepidoptera coincides with my own concerning the dearth of insects, owing to the long drought from which we suffered during the summer of 1887. The want of moisture seems, however, to have had an effect of disturbing the normal dates of emergence. As an instance of this I quote the following facts:—*Triphæna ianthina*, usually so abundant at sugar, has been only represented by a single specimen. *Rumia luteolata*, *Metrocampa margaritaria*, *Pericallia syringaria*, *Phorodesma pustulata*, *Hemithea strigata*, which I have taken regularly for some years, have been notably absentees. *Eugonia alniaria* surprised me by coming to light, quite fresh, on October 7th, more than a month later than usual. *Dipterygia scabriuscula*, one of the few moths taken plentifully in June, appeared again in September; I have never heard of this insect being double-brooded. The only noteworthy insects that I found here for the first time, in 1887, are *Sesia tipuliformis* and *S. myopæformis*, the sun having been apparently favourable to their metamorphoses; I had searched for them in vain before, but this year they were found abundantly in my own garden, and proved to be most partial to privet-bloom. *Pterostoma palpina* was taken in June, and again in August. *Chærocampa porcellus* came to light in August.—WILLIAM POWLEY; Hounslow.

WILLIAM FARREN.—We regret to hear of the death of Mr. William Farren, of Cambridge, which occurred on 21st November last, his age being fifty-one. A notice of his entomological work will appear in our next issue.—J. T. C.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*December 7th, 1887.*
—Dr. David Sharp, F.Z.S., President, in the chair. Mr. C. E. Stanley-Phillips, of Shooter's Hill; Mr. H. W. Barker, of Peckham; and Herr E. G. Honrath, of Berlin, were elected Fellows; and Lord Dormer, Mr. Francis Galton, F.R.S., and Mr. Frederic Merrifield were admitted into the Society. Mr. Jenner Weir exhibited, and made remarks on, twelve specimens of *Cicadetta hæmatoides*, collected last summer in the New Forest by Mr. Charles Gulliver. Only one of the specimens was a male, from which it was inferred that the males were more active than the females, and quickly retreated when disturbed. Mr. M'Lachlan exhibited a specimen of *Pterostichus madidus*, F., which he had recently found in a potato. It seemed questionable whether the beetle had been bred in the cavity or had entered it for predaceous purposes. Mr. Theodore Wood, Mr. Kirby, and Mr. Herbert Cox took part in the discussion which ensued. Mr. M'Lachlan also exhibited two specimens of a species of Trichoptera — *Neuronina clathrata*, Kol.—which occurred rarely in Burnt Wood, Staffordshire, and elsewhere in the Midlands. On enquiry he was informed that the two specimens exhibited had been found in the Tottenham Marshes by Mr. C. J. Boden. Mr. Porritt exhibited a series of specimens of *Cidaria truncata*, from Yorkshire, the Isle of Man, the Hebrides, and the South of England. The specimens from the two first-named localities were almost black. Mr. Verrall exhibited a specimen of *Mycetæa hirta*, Marsh., which was found devouring a champagne cork. The Rev. Canon Fowler remarked that certain *Cryptophagi* had the same habit. The discussion was continued by Mr. M'Lachlan, Mr. Jenner Weir, Dr. Sharp, and others. Canon Fowler exhibited specimens of *Acronycta alni* and *Leiocampa dictæa*, which came to the electric light on Lincoln Cathedral during the Jubilee illuminations. He also exhibited a specimen of *Harpalus melancholicus*, Dej., from Kingsgate. Mr. Billups exhibited, for Mr. Bignell, an interesting collection of British oak-galls. He also exhibited the cocoon and pupa-case of a South American moth from which he had bred 140 specimens of a species of Chalcididæ. Mr. O. Janson exhibited, for Mr. C. B. Mitford, a collection of Lepidoptera

from Sierra Leone. Mr. White exhibited a female specimen of *Composia olympia*, Butl., from Florida. He also exhibited, for Mr. Ralfe, a curious structure formed by white ants at Akyab, Burmah. Mr. Waterhouse exhibited a series of diagrams of the wings of insects, and read "Notes of observations on the homologies of the veins"—a subject to which he had given especial attention for some time past. Mr. Champion, Mr. Verrall, Mr. M'Lachlan, Dr. Sharp, Mr. Poulton, and others, took part in the discussion which ensued. Mr. G. T. Baker contributed "Descriptions of new species of Lepidoptera from Algiers." Mr. Gervase F. Mathew, R.N., communicated a paper entitled "Life-histories of Rhopalocera from the Australian Region." The paper was accompanied by elaborate coloured drawings of the perfect insects, their larvæ and pupæ. Mr. Frederic Merrifield read a "Report of Progress in Pedigree Moth-breeding, with Observations on incidental points." He also exhibited a large number of specimens of *Selenia bilunaria* (*illunaria*), &c., showing the results of the experiments he had been making. Mr. Francis Galton alluded to the close attention Mr. Merrifield had given to the subject, and complimented him on the neatness, ingenuity, and skill with which his experiments had been conducted, and on the results he had obtained therefrom. Prof. Meldola, Mr. Poulton, and others continued the discussion.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 24th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Messrs. J. Reindorp and W. H. Whiffen were elected members. Mr. Adye exhibited *Sphinx convolvuli*, *Catocala promissa*, *C. sponsa*, *Xylina ornithopus*, *X. semibrunnea*, and *X. socia*, from the New Forest. Mr. Mera, species taken on Wanstead Flats. Mr. C. A. Briggs, a fine variety of *Arctia caia*. Mr. Billups, a cocoon of a South American moth, the pupa being about the size of *Chærocampa porcellus*, from which 139 perfect specimens, 19 immature specimens, and 9 larvæ of a parasite of the genus *Smicra* had emerged. Mr. Billups also exhibited on behalf of Mr. S. Moseley, a case illustrating the life-history of the Hessian Fly (*Cecidomyia destructor*), with examples of infected straw; and on behalf of Mr. Bignell, a case of British galls, with gall-flies, and contributed notes. Mr. Fenn, on behalf of Mr. T. D. A. Cockerell, caddis cases, *Helicopsyche*, sp. ? a genus of Trichoptera, from Divide Creek, Garfield Co.,

Colorado, which closely resemble the shells of the genus *Valvata*. Mr. R. Adkin exhibited series of *Spilosoma mendica*, including males, varying in colour from creamy-white to smoky-brown, and females of the usual white form, bred from ova from Co. Cork; males of the creamy-white shade taken at light at Antrim; and bred males and females of the usual English type for comparison; and remarked that the light-coloured males were the var. *rustica*, Hub.; that it had been taken both in the North and extreme South of Ireland, but that he had no definite record of it from the central or western districts, and that it appeared to be very doubtful whether the usual smoky-black form of the male occurs at all in that country. Mr. West, of Streatham, exhibited specimens of Locustidæ from Switzerland.

December 8th, 1887.—The President in the chair. Messrs. W. White, A. J. Hodges, T. H. Leach, G. H. Verrall, F. Grut, F. J. Winkley, A. Waterhouse, H. A. Yardley, and G. B. Routledge were elected members. Mr. Sheldon exhibited examples of the spring and summer broods of *Scoparia angustea*, and called attention to the larger size of the summer brood, which led to a considerable discussion, Messrs. J. Jenner Weir, Carrington, Tutt and others taking part. Mr. Ince, a comparative series of *Nepa cinerea*, and remarked on the colour of the abdomen, ranging from red in some specimens to black in others. Mr. Tutt, examples of Micro-Lepidoptera, showing system of setting specimens unpinned, as advocated by Mr. G. Coverdale some time since. Mr. Fenn read notes received from Mr. T. D. A. Cockerell, on a case of mimicry between *Vanessa antiopa* and a species of Locustidæ, observed by him in the Colorado Rocky Mountain region.—H. W. BARKER, *Hon. Sec.*

NORTH KENT ENTOMOLOGICAL SOCIETY.—The pocket-box exhibition of insects bred or captured during the past year, or those not previously exhibited, was held by the members of the above Society, on Thursday, November 24th, 1887, at the Royal Assembly Rooms, New Road, Woolwich. There was a very good attendance, and the principal exhibitors were:—W. G. Dawson, collection of Micro-Lepidoptera, including many Crambites. The President, Mr. Smith, preserved larvæ and Macro-Lepidoptera, including a long series each of *Thecla w-album*, *Sesia asiliformis*, and series of *Tanagra atrata*, one being

a pale variety (nearly white), which was captured by Mr. Nussey. J. Knight's exhibit included upwards of 350 species, the majority being taken from the immediate neighbourhood. H. Webb, vars. of *Argynnis euphrosyne*, *Zygæna filipendulæ* with confluent spots, *Lycæna corydon* from Plumstead marshes, *Sphinx convolvuli*, Ichneumonidæ, Colcoptera, &c. Messrs. Knight and Allbuury, chiefly coast species, and a fine variety of *Arctia villica*. H. J. Sargeant, *Sphinx convolvuli*, *Cucullia chamomillæ*, *Amphipyra pyramidea*, &c. Mr. Holmes, some very good vars. of *Arctia caia*. W. Webb, Lepidoptera from South America, Noctuæ, &c., and a locust taken in Plumstead marshes in August. J. Race, *Trochilium crabroniformis*, *Macroglossa stellatarum*, *Geometra papilionaria*. Mr. Nussey, autumn species, and a brilliant collection of Lepidoptera from South America.—H. J. WEBB, Secretary; 5, Downes Place, Plumstead.

REVIEW.

Rhopalocera Nihonica: a Description of the Butterflies of Japan.

By H. PRYER. Yokohama: Published by the Author.
Part I.

THE author states that Mr. Distant's excellent '*Rhopalocera Malayana*' suggested to him to attempt a similar illustrated book on the Butterflies of Japan.

The first part contains three plates, drawn and lithographed by native artists, and the belief of the author that they will be found to compare most favourably with those of foreign publications is fully justified. Mr. Pryer modestly admits that he could not hope to produce as complete a work as Mr. Distant's; but when the disadvantages under which he labours are fully considered he may be congratulated, so far as the issue of the first part enables one to judge, in having produced a well illustrated work, accompanied with most interesting letterpress, valuable both to the systematic and biological entomologist; this is executed in both languages, English and Japanese, and in this respect is a literary curiosity.

One of the most interesting subjects dealt with is what Mr. Pryer terms "temperature forms:" these he considers due to

the exceptional amount of change in climate which takes place during the year; to give an instance—*Papilio machaon*, Lin., first appears as an imago in March, about the size of, and closely resembling, the British insect; in this stage it is the *P. asiatica* of Butler. The wing expanse is then about 3·40 inches. As the summer advances the successive broods increase in size and depth of coloration until the *P. hippocrates* form of Felder is produced; this much darker form is about 5·40 inches in the expanse of wings, or two inches more than the specimens of the spring emergence. *Papilio xuthus* and *P. xuthulus* are placed as one species, the former being the later emergence.

Aporia crataegi attains a much larger size than in England, reaching a wing expanse of 3·23 inches.

Mr. Pryer errs in suppressing the names for local forms; unless these are used where well-marked geographical races are spoken of, the correct meaning could not be conveyed. The *Pieris rapæ* figured is the topomorphic variety, named *P. crucivora* by Butler, and differs so much from the European *P. rapæ* that some authors have deemed it a variety of *P. brassicæ*.

The insect figured as *P. napi* is sufficiently different from the European form to warrant the retention of a sub-specific name, if not a specific, although it unfortunately happens that the *P. megamara* of Butler is the first emergence of the *P. melete* of Menetries. It is in its two horeomorphic forms totally unlike the British species. The spring form does not, like the British, lean towards *B. bryoniæ* in duskiness; and the late emergence has even less resemblance to the British summer emergence. Quite a third of the upper wing of the female figured is black, and the size would exceed the average English specimens by at least half an inch in the expanse of wing.

Similar remarks will apply to the figures of *Leucophasia sinapis*. Judging from analogy, fig. 7, plate 2, is a spring form; and fig. 8, if of the same species, is from a specimen of the summer emergence. The former has been named *L. amurensis* by Menetries, and the latter *L. vilibia* by O. Janson.

It will be seen that the book is full of both interest and instruction, and is a real addition to our knowledge of the Rhopalocera of Japan.

The book is uniform in size with Mr. Distant's.—J. J. W.

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LEPIDOPTERA OF THE OUTER HEBRIDES.

BY RICHARD SOUTH, F.E.S.

MR. McARTHUR, who was last year (1887) in the Island of Lewis from May to September, has added considerably to our knowledge of the lepidopterous fauna of the Outer Hebrides. Eighty-eight species of Macro- and thirty species of Micro-Lepidoptera are represented in the collection he has brought from Lewis.

Checked by Mr. Jenner Weir's list of the species captured in the island by Mr. Meek's collector in 1881 (Entom. xiv. 218), I find that Mr. McArthur's captures comprise seventy-three species not named in that list; while, on the other hand, some thirteen species taken in 1881 do not appear to have been observed in 1887.

The additional species are:—

Pieris brassica. Rare.
Epinephele ianira. Not common.
Spilosoma fuliginosa. Rare.
Hepialus hectus. Not common.
Bombyx rubi. Very common.
B. quercus var. *callunæ*. Rare.
Saturnia pavonia. Very common.
Dicranura vinula. One example only.
Tapinostola fulva. One example only.
Hydræcia nictitans. Rare.
H. micacea. Rare.
Charæas graminis. Rare.
Mamestra furva. Rare.

Apamea leucostigma. One specimen only.
Celæna haworthii. Rare.
Caradrina quadripunctata. Rare.
Agrotis vestigialis. Common.
A. cursoria. Common.
A. tritici. Common.
A. aquilina. Not common.
A. agathina. „
A. lucerneæ. Rare.
Noctua glareosa. Common.
N. neglecta. Not common.
N. xanthographa. Not common.
Xanthia citrugo. Only one specimen.
Dianthæcia nana. Very rare.

Cleoceris viminalis. One example.
Hadena glauca. Two specimens.
Anarta melanopa. Rare.
A. myrtilli. Common.
Rumia luteolata. Very common.
Cabera pusaria.
Abraaxas grossulariata. Common and very typical.
Ligdia adustata.
Oporabia filigrammaria. Common.
Larentia flavicinctata. Two only.
L. viridaria. Common.
Emmelesia alchemillata. Only one.
E. adaequata. Common.
Eupithecia venosata. One wasted example.
E. castigata. Common.
Thera simulata. Some very light-coloured forms were taken.
T. firmata. Rare.
Hypsipetes sordidata. Rare.
Melanippe sociata.
M. fluctuata. Very rare.
Coremia munitata. Not common.
Cidaria immanata.

C. testata. Not uncommon.
C. populata. Common.
Scoparia ambigua.
Crambus ericellus.
C. perlellus.
Phycis fusca.
Tortrix rosana.
Rhacodia caudana.
Penthina marginana.
Sericoris littoralis.
S. lacunana.
Mirodia schulziana.
Cnephasia musculana.
Clepsis rusticana.
Bactra lanceolata.
Phoxopteryx biarcuana.
Phileodes tetraquetra.
Hypermezia cruciana.
Padisca corticana.
P. solandriana.
Dicrorampha plumbana.
Catoptria fulvana.
Symathis oxyacanthella.
Eupæcilia angustana.

Species not observed in 1887 :—

<i>Apamea basilinea</i> .	<i>Cidaria suffumata</i> .
<i>A. gemina</i> .	<i>Scoparia angustea</i> .
<i>Aplecta occulta</i> .	<i>Tortrix palleana</i> .
<i>Hadena thalassina</i> .	<i>Pardia tripunctana</i> .
<i>Odontoptera bidentata</i> .	<i>Sericoris urticana</i> .
<i>Dasydia olfuscaria</i> .	<i>Grapholitha subocellana</i> .
<i>Coremia ferrugata</i> .	

All the species are interesting, and the majority show more or less local variation ; but the most noteworthy perhaps in the entire collection are :—

Lycæna icarus.—Some males of a very rich blue, and with distinct black marginal spots on the upper surface of hind wings.

Nemeophila plantaginis. — Examples of the white variety (*hospita*).

Agrotis cursoria.—Specimens very close to that figured from Shetland (Entom. xvii. pl. i. fig. 3).

Melanippe sociata. — Judging from first impressions, one would certainly say this was a distinct species ; but, although the dark grey colour with which the insect is suffused suggests

something new, a careful examination of the lines and other markings prove it to be a local form of *M. sociata*. The woodcut of the male insect here given will convey a better idea of



this Hebridian form than the most elaborate description. I would propose that this form should be known as var. *obscurata*.

Melanippe montanata.—Some of the specimens are more or less silvery white in colour of ground; others have the band interrupted below the middle, and in one or two examples the band is represented by a dot or small patch of dark colour on the costa only.

Campptogramma bilineata.—Referring to the Hebridian form of this species (Entom. xiv. 218), Mr. Jenner Weir says, "The primary wings, though not strictly grey, have the appearance of being washed with that colour." This feature is forcibly exhibited in the specimens brought from Lewis last year, which may be briefly described as follows:—Ground colour pale ochreous, abundantly sprinkled with brown atoms, and marked with numerous dark brown zigzag lines. These, together with three white lines and the pale ochreous ground, in conjunction with the dark brown ornamentation, give the primaries a greyish brown appearance. The hind wings appear golden brown, with a number of darker brown lines most closely approximating from the middle to the base of the wing. As is often seen in the type, the space between the second and third white lines on the fore wings is more or less completely filled up with blackish scales.

Although *Emmelesia albulata* was not uncommon, no example of the white variety *hebridium* was seen by Mr. McArthur in Lewis last year.

12, Abbey Gardens, St. John's Wood, London, N.W., January, 1888.

DISTRIBUTION OF LEPIDOPTERA IN THE OUTER HEBRIDES, ORKNEY, AND SHETLAND.

By RICHARD SOUTH, F.E.S.

THE following table is compiled from notes and papers by Messrs. Briggs, Weir, Dr. Buchanan White, and others in the 'Entomologist,' 'Scottish Naturalist,' &c. The order of columns is that of numerical rather than geographical sequence.

RHOPALOCERA.

	Ork.	O. Heb.	Shtl.		Ork.	O. Heb.	Shtl.
PIERIDÆ				SATYRIDÆ			
Pieris brassicæ	+	+		Epinephele ianira		+	
P. rapæ	+			Cænonympha typhon	+	+	+
NYMPHALIDÆ				LYCENIDÆ			
Vanessa atalanta	+		+	Lycena icarus	+	+	
V. cardui	+		+				

HETEROCERA.

SPHINGIDÆ				Miana fasciuncula			+
Acherontia atropos	+		+	M. bicoloria	+		
Sphinx convolvuli	+		+	Celena haworthii	+	+	+
Macrog. stellatarum	+			CARADRINIDÆ			
CHELONIDÆ				Stilbia anomala	+		
Nemeop. plantaginis	+	+	+	Carad. quadripunctata	+	+	+
Arctia caia	+			Rusina tenebrosa		+	
Spilosoma fuliginosa	+	+		NOCTUIDÆ			
HEPIALIDÆ				Agrotis vestigialis		+	
Hepialus humuli	+	+	+	A. suffusa	+	+	+
H. velleda	+	+	+	A. cursoria		+	+
H. lupulinus	+			A. tritici		+	
H. hectus		+		A. aquilina		+	
BOMBYCIDÆ				A. agathina		+	
Bombyx rubi		+		A. strigula	+	+	+
B. quercus	+	+		A. simulans	+		
SATURNIDÆ				A. lucerneæ		+	+
Saturnia pavonia	+	+		Noctua glareosa	+	+	+
DICRANURIDÆ				N. augur	+		
Dicranura vinula		+		N. c-nigrum	+	+	+
CYMATOPHORIDÆ				N. brunnea		+	
Cymatophora or		+		N. festiva	+		
LEUCANIDÆ				N. festiva v. conflua	+	+	+
Tapinostola fulva		+		N. dahliei	+		
APAMEIDÆ				N. baia		+	
Hydroecia nictitans	+	+		N. castanea	+	+	
H. micacea	+	+	+	N. xanthographa	+	+	+
Xylophasia rurea	+	+		Triphæna comes	+	+	
X. monoglyphæ	+	+	+	T. orbona			+
Chæreus graminis	+	+	+	T. pronuba	+	+	+
Mamestra furva	+	+	+	ORTHOSIDÆ			
M. brassicæ	+	+	+	Pachnobia hyperborea			+
Apamea basilinea	+	+	+	Teniacampa gothica	+		
A. gemina	+	+		Xanthia citrargo		+	
A. unaminis	+			X. circellaris	+		
A. leucostigma		+		HABENIDÆ			
A. didyma	+		+	Dianthecia nana		+	+

	Ork.	O. Heb.	Shtl.		Ork.	O. Heb.	Shtl.
<i>Dasytopia templi</i>			+	<i>T. firmata</i>			+
<i>Epunda lutulenta</i> var.				<i>Hypsipetes ruberata</i>	+		
<i>lunenburgensis</i>	+			<i>H. trifasciata</i>			+
<i>Cleoceris viminalis</i>	+	+		<i>H. sordidata</i>	+	+	
<i>Euplexia lucipara</i>	+			<i>Melanthia ocellata</i>	+	+	
<i>Phlogoph. meticulosa</i>	+			<i>Melanippe hastata</i>			+
<i>Aplecta occulta</i>	+	+	+	<i>M. sociata</i>	+	+	
<i>Crymodes exulis</i>			+	<i>M. montanata</i>	+	+	+
<i>Hadena adusta</i>	+	+	+	<i>M. fluctuata</i>	+	+	+
<i>H. glauca</i>	+	+		<i>Coremia munitata</i>	+	+	+
<i>H. dentina</i>	+	+	+	<i>C. designata</i>	+		
<i>H. oleracea</i>			+	<i>C. ferrugata</i>			+
<i>H. pisi</i>	+			<i>Camptogra. bilineata</i>	+	+	+
<i>H. thalassina</i>	+	+		<i>Cidaria miata</i>	+		
XYLINIDÆ				<i>C. truncata</i>	+	+	
<i>Calocampa vetusta</i>	+			<i>C. immanata</i>	+	+	+
<i>C. exoleta</i>	+			<i>C. suffumata</i>			+
PLUSIIDÆ				<i>C. prunata</i>	+		
<i>Habrostola tripartita</i>	+			<i>C. testata</i>	+	+	+
<i>Plusia gamma</i>	+		+	<i>C. populata</i>	+	+	
<i>P. iota</i>	+			<i>C. fulvata</i>	+		
<i>P. pulchra</i>	+			EUBOLIDÆ			
HELIOTHIDÆ				<i>Carsia paludata</i>	+		+
<i>Anarta melanopa</i>		+	+	<i>Anatis plagiata</i>	+		
<i>A. myrtilli</i>	+	+		PYRALIDIDÆ			
ENOMIDÆ				<i>Scoparia ambigualis</i>		+	+
<i>Rumia luteolata</i>		+		<i>S. atomalis</i>	+		+
<i>Odontoptera bidentata</i>		+		<i>S. murana</i>		+	
BOARMIDÆ				<i>S. angustea</i>		+	+
<i>Boarmia repandata</i>		+		<i>S. alpina</i>	+		+
<i>Dasydia obfuscaria</i>		+		<i>S. pallida</i>	+		+
CABERIDÆ				<i>Nomophila noctuella</i>	+		+
<i>Cabera pusaria</i>		+		<i>Herbula cespitalis</i>	+		+
FIDONIDÆ				BOTYDÆ			
<i>Scodionia belgaria</i>	+	+		<i>Scopula lutealis</i>	+		
<i>Ematurga atomaria</i>	+	+		<i>S. prunalis</i>	+		
ZERENIDÆ				CRAMBIDÆ			
<i>Abraxas grossulariata</i>		+		<i>Crambus pratellus</i>	+	+	+
<i>Ligdia adustata</i>		+		<i>C. pascuellus</i>			+
LARENTIIDÆ				<i>C. ericellus</i>		+	
<i>Opor. filigrammaria</i>	+	+		<i>C. margaritellus</i>		+	
<i>Cheimatobia brumata</i>	+			<i>C. perlellus</i>		+	+
<i>Larentia didymata</i>	+	+	+	<i>C. culmellus</i>	+	+	+
<i>L. cæsiata</i>	+	+	+	<i>C. hortuellus</i>			+
<i>L. flavicinctata</i>		+		PHYCIDÆ			
<i>L. salicata</i>	+			<i>Phycis fusca</i>		+	
<i>L. viridaria</i>	+	+		TORTRICIDÆ			
<i>Emmel. alchemillata</i>		+		<i>Tortrix rosana</i>		+	
<i>E. albulata</i>	+	+	+	<i>T. palleana</i>		+	
<i>E. minorata</i>	+			<i>Peronea variegana</i>	+		
<i>E. adæquata</i>	+	+		<i>P. hastiana</i>	+		
<i>Eupithecia venosata</i>	+	+	+	<i>P. caledoniana</i>	+		
<i>E. satyrata</i>	+	+		<i>Rhacodia caudana</i>	+	+	
<i>E. castigata</i>		+		<i>Teras contaminana</i>	+		
<i>E. nanata</i>	+	+	+	<i>Dictyop. læflingiana</i>	+		
<i>E. vulgata</i>		+		PENTHINIDÆ			
<i>E. minutata</i>	+			<i>Penthina marginana</i>	+	+	
<i>E. lariciata</i>		+		SPILONOTIDÆ			
<i>E. sobrinata</i>	+			<i>Pardia tripunctana</i>		+	
<i>E. pumilata</i>	+	+		SERICORIDÆ			
<i>Thera simulata</i>	+	+		<i>Sericoris littoralis</i>	+	+	+
<i>T. variata</i>		+		<i>S. urticana</i>		+	

	Ork.	O. Heb.	Shtl.		Ork.	O. Heb.	Shtl.
<i>S. lacunana</i>		+	+	<i>D. tanaceti</i>			+
<i>Mixodia schulziana</i>	+	+	+	<i>Catoptria ulicitana</i>	+	+	+
<i>Orthotænia antiquana</i>			+	<i>C. fulvana</i>		+	
SCIAPHILIDÆ				PYRALOIDIDÆ			
<i>Cnephasia musculana</i>	+	+	+	<i>Symæt. oxyacanthella</i>	+	+	+
<i>Sciaphila penzina</i>		+		CONCHYLIDÆ			
<i>Clepsis rusticana</i>	+	+		<i>Eupœcilia angustana</i>	+	+	
GRAPHOLITHIDÆ				<i>C. ciliella</i>	+		+
<i>Bactra lanceolana</i>	+	+	+	<i>C. thuliana</i>			+
<i>Phoxopter. unguicana</i>	+	+	+	<i>Argyro. hartmanniana</i>	+		
<i>P. biarcuana</i>		+		<i>A. cnicana</i>	+		+
<i>P. myrtillana</i>	+			<i>Aphelia osseana</i>	+		+
<i>Graphol. subocellana</i>	+	+		TINEIDÆ			
<i>G. penkleriana</i>	+			<i>Blaboph. rusticella</i>			+
<i>Phleod. tetraquetrana</i>	+	+		PLUTELLIDÆ			
<i>Hypermeia cruciana</i>	+	+		<i>Plutella cruciferarum</i>			+
<i>Pædisca corticana</i>		+		GELECHIDÆ			
<i>P. solandriana</i>	+	+		<i>Gelechia ericetella</i>			+
<i>P. sordidana</i>	+			<i>Endrosis fenestrella</i>			+
<i>Ephippip. pflugiana</i>	+			<i>Ecop. pseudospretella</i>			+
<i>Coccyx tædella</i>		+		GLYPHIPHYTERYGIDÆ			
<i>Pamplus. mercuriana</i>	+			<i>Glyphipter. cladiella</i>			+
<i>Dicroram. plumbana</i>		+					
						137	131 82

Of the 210 species enumerated, it will be seen that 137 have been observed in the Orkneys, 131 in the Hebrides, and 82 in Shetland. Forty-seven species occur in Orkney which have not yet been recorded from either the Hebrides or Shetland. The same number of species found in the Hebrides have not, so far, been observed in Orkney or the Shetlands; while in the last-named islands 18 species occur which have not hitherto been detected in the Orkneys or Hebrides.

Forty-one species have representatives in each group of islands. Thirty-four species are common to the Hebrides and Orkneys, but are not known to occur in Shetland. Sixteen species found in Orkney and Shetland have not been noticed in the Hebrides, and eight found both in Shetland and the Hebrides have not been met with in Orkney.

In his paper on "The Lepidoptera of Orkney, Shetland, and the Outer Hebrides,"* Dr. White gives the number of species as 175, so that the increment, up to 1887, is 35. Probably our knowledge of the lepidopterous fauna of the islands under consideration is still far from complete. Further exploration and careful investigation may possibly add many other species to the list given above.

12, Abbey Gardens, St. John's Wood, N.W., January, 1888.

* 'Scottish Naturalist,' 1882.

CLOSTERA ANACHORETA.

BY THE REV. JOSEPH GREENE, M.A.

I AM very anxious to once more re-open the question, "Is *Clostera anachoreta* an indigenous British insect?" I have never thought it to be so. My last communication to 'Entomologist' was in 1881, nearly seven years ago. As it is necessary to my enquiry, and as probably most of your present readers know little as to the particulars of its appearance in this country twenty-eight years ago, I reproduce it here: "In the year 1859, Dr. Knaggs announced that he had discovered eleven larvæ of this, till then, reputed British species. Ten pupæ resulted, and eggs were produced in due course. These, more or less, were distributed among various entomologists (myself included), and they having, in their turn, obtained eggs, the insect was bred for some years in such vast numbers as to become an absolute drug, and people ceased to keep up the brood any longer. Can any of the numerous readers of the 'Entomologist' inform me whether it has ever been taken since then in a 'state of nature?' I observe in the 'Zoologist' (1863, p. 8694), a notice from Mr. Sidebotham, that he had taken a larva at Folkestone, very near the place where Dr. Knaggs made his discovery; and a similar notice from Mr. Meek, in the 'Ent. Mo. Mag., (i. 123). These instances are all that I can discover, and they do not answer my question in the way I desire, as these larvæ were found in the same place as Dr. Knaggs's, and the 'home-breeding' had, perhaps, scarcely fallen through" (Entom. xv. p. 117). Two, and only two, replies to my question appeared in the same volume (pp. 133—160). The latter I dismiss for the present. The first was extremely interesting, and very much to the purpose. From it I make the following extracts:—"In answer, &c., I send an account of my own experience. In September, 1861, my father found a larva feeding on poplar, in some small plantations below West Cliff, Folkestone; but I did not recognise the species till the pupa hatched on April 27th, 1862. . . . This larva of *C. anachoreta* and the subsequent ones of this species we found in 1862—3, were only on this 'balsam poplar.' In the autumn of 1862 my brother and I found twelve larvæ; one died when young, the other eleven changed into pupæ, all of which hatched in the

following spring. . . . In October, 1863, we found *Notodonta ziczac*, *N. dictæa*, and one larva of *anachoreta*, which we did not keep as we had bred them in plenty. During that month we turned out eighty-four nearly full-fed larvæ of *anachoreta*, but not all bred from the same parents, in different places among these plantations. We put the larvæ on the same species of poplar we had first found them on, in order thoroughly to establish the species there; but *since that date* we have neither of us seen the larva of *anachoreta* there, although we have been at Folkestone every autumn up to the present time, . . . not having seen an *anachoreta* larva for eleven years, I was deceived in the spring of 1874, by finding some young larvæ in these plantations, which proved to be those of *S. salicis*.”—T. H. Briggs, May 14th, 1881. (The italics are mine).

From the above it will readily be seen that, even in its birth-place, the insect steadily diminished in numbers, until in 1864 it disappeared altogether, though eighty-four full-grown larvæ had been distributed in the locality; and though carefully sought for eight successive autumns, not a single specimen was taken. It is further to be observed that the *one* larva taken by Mr. Sidebotham, and that by Mr. Meek, were both captured at the *original* locality and prior to 1864.

In the other reply Mr. S. Norman refers me to Entom. vol. ix. 232. Mr. Norman states there that he found a pupa, but did not know what it was, until it emerged the following May; and in his more recent communication adds, that he found it under loose bark on *willow*. This seems strange, as every record gives *poplar* as the food of *anachoreta*. Is Mr. Norman quite sure that he did not mistake *Clostera curtula* for *anachoreta*? Until this be clearly ascertained I cannot attach much value to this communication. Since I wrote in 1881 I have again carefully examined the pages of the ‘Zoologist,’ ‘Entomologist,’ and the ‘Ent. Mo. Mag.,’ with the result that (putting aside Mr. Norman’s statement as doubtful, and the announcement of a single larva having been bred in confinement) no mention of the capture of *anachoreta* in any stage has been recorded since 1864, a period of twenty-three years.

I said, in the commencement of this paper, that I did not believe *anachoreta* to be an indigenous British insect years ago. Still less do I believe it to be so now. All who had the oppor-

tunity of breeding it, after its discovery in 1859, must agree with me in saying that it was a most *prolific* insect. I myself have had three broods within twelve months, and, as mentioned above, the larvæ multiplied to such an extent that collectors grew tired of it, and ceased to keep up the breed. Now, from about 1854 to 1864 was one of the most (if not the most) energetic periods in the history of British Entomology (Lepidoptera). At no time, during my forty years' experience, has there been a more numerous or more skilled body of collectors, larva hunters, pupa diggers, &c. And yet I am asked to believe that an "indigenous" British insect, which has two or three broods in the year, whose larva is easily detected, and whose food is found all over the country, could have eluded the searching gaze of hundreds of keen-eyed collectors before 1859, and finally have turned up in *one* spot in England, with a reduced family of eleven! Again, is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home breeding ceased) that no record of its capture, either as imago, pupa, or larva can be found up to the present time, a period of twenty-three years? This statement is of course subject to correction. But unless it be very considerably modified, I unhesitatingly express my conviction that *Clostera anachoreta* is not a British insect. It may be asked by some of your readers who may trouble themselves to read these lines, "Is it not a fact that some insects will re-appear after long intervals?" To which I reply undoubtedly, but not, I venture to think, under the conditions above referred to. If it be further asked, "How then do you explain Dr. Knaggs's discovery?" I answer in one word "importation." Any one acquainted with my friend and correspondent Dr. Knaggs would not dream of even hinting at his taking part in any such transaction; but that *C. anachoreta*, in one or more of its stages, was ignorantly or intentionally introduced into this country about 1858 or 1859 is my fixed conviction. Hence its *non*-appearance before those years; hence its *dis*-appearance after 1864.

Rostrevor, Clifton, Bristol, January 2, 1888.

NOTES ON THE MACRO-LEPIDOPTERA OF SOUTH DEVON.

BY W. FRANCIS DE V. KANE, M.A., M.R.I.A.

WHEN recording my capture of *Callimorpha hera*, near Woodbury, South Devon, in your September number, I promised to communicate a list of species taken in that neighbourhood. The list now appended is composed of captures by myself or residents whose collections have been examined and identified by me, and localities ascertained. Exeter is, I find, considered not to be a prolific locality for Lepidoptera; and from the long residence of the late Rev. J. Hellins in that city, and the existence of a local society, one would conclude that the immediate vicinity at least has been well worked.

Nevertheless, I believe the district lying four or five miles to the south is worthy of more careful investigation. Having had no experience in England hitherto, I am no judge of the comparative richness of localities there; but certainly there are few parts of Ireland which would seem to offer such a number of interesting species.

Arriving at Winslade early in August, I found the country scorched and parched with the drought. *Lycæna icarus* was very plentiful, and showing what I have noticed abroad, that the insect had suffered in size from the dry condition of the herbage. The larvæ of the genus *Lycæna*, for the most part, delight in a succulent condition of their food, and the dry level wastes of Spain and the South of Europe produce a numerous but undersized progeny. By the haunts of a stream near, I was delighted to find *Hadena dissimilis* in some numbers, and *Pterostoma palpina* among various commoner species.

Near Woodbury, I took, as already recorded, a specimen of *Callimorpha hera*. I cannot help thinking that this beautiful insect has found its way hither from Jersey, as fishing-smacks and luggers are constantly in the estuary of the Exe, either wind-bound or with a cargo of fruit from that island. *Zonosoma porata* I also took in some numbers. A specimen of *Stilbia anomala* turned up at Budleigh Salterton. At Exmouth I could not do much collecting. On the sand-hills I noticed that various burrowing Hymenoptera were extremely numerous and of various species.

On the Warren, which I regretted to find so greatly curtailed in size by the encroachments of the sea during the last twenty years, *Mesotype virgata* is to be found.

At Chagford, on the elevated table-land of Dartmoor, I found a very promising country, but was prevented by unsuitable weather during the few days of my stay from doing much work. I took, however, *Neuria reticulata* and *Acidalia marginepunctata*, the occurrence of the latter somewhat surprising me both as to time and place. The appearance of a second brood this year has also already been recorded (E. M. M.) in Norfolk. I had considered this moth as a sea-coast insect, but, doubtless, in this as in other instances in zoology as well as botany, elevation corresponds to a large extent as to climatic conditions and general environment with the sea-shore.

A pleasant day or two at Ivybridge gave me the opportunity of making the personal acquaintance of several entomological correspondents in and about Plymouth, whose fauna is being elucidated by them, as to Diptera, Hymenoptera, and Lepidoptera. I shall therefore only record the occurrence of *Stauropus fagi*, a larva of which was swept into the net of one of our party, in the course of a pleasant ramble in Erme Wood, and most generously presented to me by the captor. In referring to the pleasant acquaintances made in South Devon, I cannot help expressing my hope that such of them as have opportunity, especially about Topsham and Exmouth, will do their duty toward the locality, and diligently explore the repertory of ivy and sallow thereabouts, as neither autumn nor spring species are represented in the following list.

W. stands for Woodbury; C. for Chagford, Dartmoor; those unmarked are from the vicinity of Topsham; abt. abundant.

RHOPALOCERA.—*Leucophasia sinapis*, W., abt. *Argynnis euphrosyne* and *selene*, W., abt. *Argynnis adippe*, one specimen, Dartmoor. *Vanessa polychloros*, scarce. *Epinephele hyperanthus*, ab. *arete*. *Lycæna argiolus*, W., abt. *Syrichthus malvæ*, ab. *taras*, W., not rare.

HETEROCERA.—*Acherontia atropos*, not rare. *Sphinx convolvuli*, very abundant last autumn. *Smerinthus ocellatus*, occasional specimens. *Macroglossa bombyliiformis*, W., not very rare. *Sesia cynipiformis*, *Nola strigula*, *Lithosia mesomella*, one specimen each. *Callimorpha hera*, one specimen, W. *Arctia villica* and *Spilosoma mendica*, not common. *Cossus ligniperda*, abt. *Pterostoma palpina* and *Notodonta chaonia*, occasional

specimens. *Xylophasia hepatica*, not rare. *Neuria reticulata*, C., one specimen. *Stilbia anomala*, one at Budleigh Salterton. *Caradrina morphus* and *Agrotis corticea*, not rare. *Aplecta advena* and *Hadena dissimilis*, not rare. *Heliothis peltigera*, *Catocala nupta*, and *Toxocampa pastinum*, one of each. *Bomolocha fontis*.

GEOMETRÆ. — *Ellopija prosapiaria*, abt. *Eurymene dolabraria*, occasional. *Pericallia syringaria*, not abundant. *Biston hirtaria*, not rare. *Nemoria viridata*, not rare, W. *Zonosoma porata*, abt. *Z. punctata*, not rare. *Eupisteria obliterated*, abt., W. *Acidalia marginepunctata*, C. *A. imitaria*, abt. *A. emarginata*, abt. *Numeria pulveraria*, not rare, W. *Larentia olivata*, occasional. *Emmelesia decolorata*, locally not rare. *Eupithecia coronata*, one specimen. *Lobophora halterata*, occasional. *Thera firmata*, not rare. *Melanthia bicolorata*, not rare. *Anticlea rubidata*, rather abundant. *Phibalapteryx vittata*, occasional. *Cidaria picata*, rather abt. *Mesotype virgata*, not rare on Exmouth Warren.

Sloperton, Kingston, Co. Dublin, December, 1887.

NOTES ON THE NOTODONTIDÆ.

By THE REV. BERNARD SMITH.

No. 4.—NOTODONTA CHAONIA AND N. TRIMACULA.

THIS species is rather more plentiful here than its congener *trimacula*. Still *N. chaonia* has not been found in the perfect state, which the other has been occasionally. Again, *chaonia* is the earlier in its appearance by a month. The moth is very local, and seems to prefer detached oaks of moderate size, on which the larva has been found, by the aid of a short ladder, up to the very summit. These trees are either in open spaces in woods, or shaded by larger trees near them.

The larva, which is very subject to be stung by ichneumons, is easily distinguished by the double lateral stripe of sulphur-yellow, which passes even round the anal segment. The best time to beat for it is from the 18th to the 30th of June in most years. It may also be found by searching, and when we have found the right tree, by the beating tray. It is a difficult species to pair in confinement. The best chance is when a female has emerged one day before a male follows. *Notodonta trimacula*, on the other hand, is not hard to pair, if "sleeved" on the growing tree.

When we have got fertile eggs of *N. chaonia* our difficulties are not ended. They will hatch, say, in twelve days, and unless

their food is ready at hand they will refuse to eat. As oak leaves are hardly opening yet, this is another difficulty. The moth does not always emerge the following spring, and then the pupa is apt to die. So that *N. chaonia* is hardly likely to become common.

There is not a variety of *chaonia* as there is of *trimacula*.

In looking for the larva it is well to note that it is generally lying under a leaf, along the midrib, so that it is rather conspicuous. Still I have always beaten three for one that I have found by search. The same trees are found to produce this larva year after year,—a remark which has been made of *Cirrhædia xerampelina* and other rare insects.

Notodonta trimacula, with its var. *dodonea*, is a species not so confined to the South. It is found, for example, in Sherwood Forest, Notts, the larvæ nestling in the deep wrinkles of the bark of its aged oaks during the day. The larva is more active than that of *chaonia*. The spiracular line is yellow, interrupted with pink as the larva approaches maturity. This moth appears early in June, and is more easy to obtain ova from than its congener; but for this purpose the parent moths should be sleeved together on the growing oak, and the ova, which are pale green, will be laid in bunches among the leaves, and will hatch and produce their larvæ in about twelve days, if the branch is sufficiently shaded from the sun. The larva buries, to turn to a smooth brown pupa, in a soft cocoon of silk and earth, preferring, it is said, the angles of the roots, where the pupa is not unfrequently dug in September and October. I have known this moth to remain two years, and even three, in pupa.

This moth deserves a long series to show its beauty and variety. The female varies less than the male, and is less liable to grease.

The food of the larva is sometimes said to be birch as well as oak; but I have no knowledge of its feeding except on oak (*Quercus robur*). It is very desirable to have at least one oak of a good size in your garden, to ensure sufficient shade in order to rear the two species above described with any success. A stiff loamy soil, of sufficient depth, is required, to produce green succulent leaves in abundance, when eaten down year after year by hungry larvæ. During the late dry season I also syringed my trees in the evenings with very good effect, especially against honeydew.

To see a *N. chaonia* emerge from its cocoon on an evening towards the end of April is very striking. The majesty with which it marches to the top of the cage, and poses, to allow its wings to grow, is quite singular. The male is apt soon to grow so restless, especially if the evening is warm, that it will often destroy itself the first night. The female is more sedate, but less so than *dodonea*.

I once found two ova laid on oak bark in a shady spot. They are white and conspicuous, and have been found on fronds of fern, owing to some accident.

To obtain this insect in any numbers, recourse must be had to the beating-tray, and it seems to occur more freely in the New Forest than anywhere else. Marlow Common is also a good hunting-ground for it; as are Burnham Beeches and Stonor Park, in the same neighbourhood. Although the larva when young is easily confounded with that of *dodonea*, yet the large green head of the former is a sufficient mark to distinguish it; and when full grown it is much stouter and more glossy, and altogether different.

Marlow, Bucks, November, 1887.

AN ENTOMOLOGICAL WINTER CAMPAIGN IN SPAIN AND NORTH AFRICA.

BY G. DIECK.

ON the 5th January I arrived in Gibraltar, and hastened to take a walk on the rock, from whence I hoped to see Tangier and Algeciras, the places I intended to visit next. On my way I took the opportunity of fishing out of the reservoir some floating beetles: among them the scarce *Asida inquinata*, *Carabus beticus*, *Pristonychus beticus*, *Geotrupes marginatus*, *Cyrtonus*, *Eumolpus*, were specially to be noticed; except for these and *Ocypus olens*, *Orthomus barbarus*, and a variety of *Licinus silphoides*, a few Halticidæ, by sweeping, *Attalus ulicis*, and *Baridius opiparis*, one example, there was little sign of activity in the fauna.

When I arrived at the summit of the rock a far greater joy awaited me. Wherever the eye turned, on all sides the most

delightful landscapes were spread out; to the north the snow-covered Andalusian mountains; to the east and west the rocky shores, with their numerous creeks and cliffs, washed by the deep blue sea; to the south, as if to shake hands with the Morocco coast in the distance; far below was the picturesque Bay of Gibraltar, studded with ships, and above it the beautiful Algeciras, the land of my longing, the classic ground of science, for here Natterer, Rambur, Will and Harold, and many colleagues, lived and collected.

A second walk led to the stretch of downs, which in the north-west of the town stretches away to Algeciras and San Roque. Here were found plentifully, *Erodium tibialis*, *Zophosis suborbicularis*, *Pachychila salzmännii*, *Pimelia fornicata* (variety with small weak sculpture); more rarely, *Isocerus ferrugineus*, *Ammophthorus rugosus*, and other sand beetles; while in the neighbouring cattle-pastures were found *Chrysomela diluta*, *Dermestes sardous*, *Sitones discoideus*, *Brachinus bœticus*; more seldom, *Lebia pubipennis* and *Singilis bicolor*. As I wished to pass some time for the quieting of my mind after my unpleasant experience in Malaga, before I again trusted myself in Andalusia, I determined to go for some weeks out of the way of the Revolution, and to settle at Tangier. There is almost daily steam communication with Tangier by means of the garrison provision-boats, which have to provide the fortress with meat and field produce from Morocco: I therefore soon found an opportunity of crossing, and got over after about a two hours' passage. My fears of finding in Morocco only indifferent provisions were, however, groundless, for the town of Tangier possesses two French and two English hotels, which equal, or even surpass, the Spanish Fondas in comfort. I also found the personal safety of the solitary traveller much less in danger than in Spain, for during my stay there of several weeks I experienced nothing but kindness from the country people, without ever—as so often happened in Spain—being the least annoyed by beggars. In short, I had no cause of complaint of any kind during the whole time I had to reside in this interesting country, while I discovered a (to me) perfectly new and extraordinary insect fauna. The country round Tangier may properly be divided into two geological districts, and according to this division of the ground, the fauna and flora also naturally divide themselves.

West of the town to Cape Spartel, the land consists, with the exception of the sandy coast line, of rich chalk and marl, and has, consequently, a particularly varied flora and fauna; while to the east, the sand-hills of the coast stretch away inland, only intersected by two small streams, along the banks of which a strip of alluvial soil has been deposited. This side is naturally much poorer in the number of species which occur, while in the number of individuals, it is much richer than the clay district. Among the grass on the sand-hills were found thousands of *Isocerus ferrugineus*, *Helops pallidus*, *Pachychila salzmanni*, 2 *Tentyria*, *Trachyscelis*, *Anmophthorus*, *Phalerii*, more rarely some *Erodia*, 2 *Scarites* (the *Scarites* and *Pimelia* appear to be particularly infested by the thread-worm, for I have often found as many as two on one specimen), 1 *Zophosis*, 2 *Pimelia*, 2 *Brachycerus*, *Leichenium variegatum*, and many others. Several varieties of *Cicindela flexuosa* and *C. maroccana*, were flying about in considerable numbers in sheltered places on the 13th January. The blossoming bushes of *Genista monosperma* furnished *Apion cretaceum*, *Cnerrhinus ludificator*, *Litargus coloratus*, *Pria pallidula*, Er., and some *Cryptophagi*, while under stones and the leaves of the aloes, lived *Adelostoma*, *Tagenia*, and in separate places several newly described (?) *Thylacites*.

More frequently I visited the western district, which I traversed for the most part from the Zocco, that is, a gate by the market-place, in the road leading to Cape Spartel. On this road one first crosses a short sandy tract, which at the time was still used as the town cemetery, and then after some ten minutes walking the chalk soil is reached, and with it the area of a deserted graveyard, and under the numerous scattered gravestones here lying around a very excellent Coleoptera-fauna was concealed. Under the very first stone which I raised was a new blind species of Curculionidæ (?), which I afterwards described as *Crypharis robusta*; with it were found on the under side of the stone, *Otenistes barbipalpis*, Fairm., and *C. integricollis*, Fairm., lately suppressed by de Sauley, as varieties of *C. aubei* and *C. ghilianii*, as well as the new *Tychus miles* and *T. armatus*, Sauley. I also captured here in great numbers, *Scydmaenus promptus*, *S. spissicornis*, *S. intrusus*, *S. conspicuus*, *Bryaxis opuntiae*, *Cossyphus dejeanii* and *C. pygmæus*, *Brachinus testaceus*, Ramb., *Ophonus planicollis*, *Apotomus rufus*, *Ditomus gracilis*, and a form very

nearly related to it, but which, perhaps, is only the other sex; more rarely there were *Bryaxis dentiventris* and *B. hemiptera*, Sauley, *Seydmænus maroccanus* and *Hefferi* var., *Amblystomus mauritanicus*, *Platyтарus mauritanicus*, the important *Asida sulcata*, *Timarcha rugosa*, and *Anisorhynchus barbarus*, a number of *Achenii* and *Lathrobii*, *Tachys algericus*, *Tychius elephas*, Kr., *Ptinus obesus*, and some other species; very scattered *Platyderus gregarius* and *P. alacer*, *Carabus barbarus*, *Cephenium bicolor*, Sauley, n. sp., *Tychus jacquelinei*, and *Euplexus afer*, Sauley; and among ants, tolerably plentiful, *Paussus favieri*, *Merophysia carinulata*, Ros., and *Cholorocera formiceticola*, Ros. Another quarter of an hour's journey brought me to a small mosque, in which the country people said their prayers, and were accustomed to deposit their offerings, consisting for the most part of incense and tapers. Near by the remains of old walls testified that here stood formerly a gate of old Tingis, which in the time of Hannibal might have been a town of 200,000 inhabitants, and, as the numerous ruins showed, had extended for three leagues along the sea-shore. From here the road leads on through a broad river valley called Bubana, and formed by the Guadlighthouth, the Rio de los Judios of the Spanish colonists.

On the banks of this stream we found numbers of *Chlœnii*, principally *C. velutinus*, *C. spoliatus*, and a species of the genus unknown to me, and probably not occurring in Europe. In the *Genista* brought down by floods the usual shore beetles, *Heteroderes algerinus* and *Amblyderus scabricollis* were naturally not wanting, but the greater number of the insects occurring here consisted of *Staphylinidæ*, *Aphodii*, and *Cryptophagi*. One *Lithonoma* was also found, which, however, I was not able to distinguish from *S. andalusica*, likewise a single *Colaphus rufifrons*. On the other side of the river were very damp clay unploughed fields, which were noticeable for their profusion of large stones, which apparently would conceal highly interesting creatures. The first stone which I raised I let almost fall again from joyous surprise, for under it the whole creeping animal world of the neighbourhood appeared to have made their rendezvous. There were *Siagona jenissoni*, in a swarming crowd, mixed up with *S. dejeani*, *Chlœnius azureus*, *Pæcilus cupripennis*, *P. numidicus*, *Calcar elongatum*, a host of *Brachinus angustatus*, and *B. testaceus*, Ramb., *Cossyphus dejeanii*, *C. incostatus*, *C. pygmæus*; running

about in the midst were gigantic centipedes, uncomfortable long-legged *Scolopendri*, also a *Scorpio mauritanicus* with malignant protruded sting; while a wonderful thing, the extraordinary rare *Salamander pleurodeles*, appeared to be looking at me very reproachfully, because I wished to drive him from such a productive hunting-ground. I had not, however, time to delight myself long with this sight, so immensely full of enjoyment to an enthusiastic naturalist, for it was before all things necessary to capture the active insects before they could disappear into their hiding-places, which nine-tenths of them generally succeed in doing. One can easily believe that under such circumstances I did not rest until the last stone in this productive locality had been two or three times turned over, and was often obliged, in order to bring back my captures (when all bottles and boxes were filled), to use my pockets and pin them up in them.

On leaving the foot of the valley the path rises with the ground, and the soil and fauna change considerably. The former is here slightly mixed with sand and overgrown with asphodels, at that time in bloom, and much low brushwood. This locality appeared to me a likely place for finding eyeless beetles, and as I was already assured by the capture of *Crypharis* that blind beetles were to be found at Tangier, I set to work, by means of an iron lever, to raise the stones which were fixed the deepest in the earth, and after barely a quarter of an hour's work I had the satisfaction of discovering a new *Anillus (massinissa, m.)*, which was soon followed by a new species of *Silvanus (Typhlocharris silvanoides, m.)*, and a new *Crypharis (tingitana, m.)*. As most of the readers of these lines will probably never have had an opportunity of observing these interesting insects in their natural state, I will add some words about the capture of them. As soon as a stone has been turned over, one must hasten to inspect the under side of it, giving only a secondary attention to the damp space beneath it. Suddenly the searching eye perceives one, then two *Anilli* rise sleepily upon their fore-legs, apparently incommoded by the warm rays of the sun, never experienced until now; they flourish their delicate antennæ in the air, turn themselves first to the right and then to the left, without knowing where, until they suddenly hurry away in the most doubtful anxiety. The inexperienced collector would be contented to arrest these fugitives and then turn to another stone, but he would in this way have

overlooked the best. He must remain a little while at one stone, and examine for five or ten minutes every square inch of its under side, every unevenness, every crevice of it, and even then in a yet unobserved chink a *Typhlocharis* will slowly and cautiously raise its head, and make a wary step towards a cooler corner, when suddenly some obstacle, which we at first sight take for a tiny clod of earth or small splinter of wood, stops its way, but which now shows signs of life, and extends first one and then two legs, and appears still to be uncertain whether it shall contemptuously ignore the unexpected hindrance, or whether it shall seek for itself another nook, where it may continue without interruption its *dolce far niente*. This tiny clod of earth was in reality a *Crypharis*, which in earth-coloured dress, with its legs convulsively contracted under its body, thought itself secure and undiscoverable in its retreat. Undoubtedly two of the four specimens of my *Crypharis tingitana* were found in the chinks of the stones; and certainly one specimen, as I have already remarked in the description, in the bulb of an *Asphodelus*. *Anillus* also was found in considerable numbers in the cavities left by the stones, where, as soon as it encountered the sun's rays, it dexterously made its retreat, and then could be no more obtained; whereas *Typhlocharis* seemed to confine itself almost exclusively to the under side of the stones. Besides these eyeless beetles, there were found under the same stones, in tolerably plenty, *Ditomus gracilis*, *Scarites saxicola*, Bon., *Ditomus cephalotes*, and an *Otiorhynchus* allied to *affaber*; more rarely *Chlœnius azureus*, *Hybalus tingitanus*, *Adelostoma*, and a *Pedinus*. I probably visited this extraordinary locality ten times, and when finally, near or far, there was no other stone to turn over, I had the satisfaction of having carried off from their native fields 200 *Anilli* and 70 *Typhlochari*.*

(To be continued.)

* Extract from Berl. Ent. Zeit. xiv. (Translation communicated.)

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

MANY of the Lepidoptera are very variable, and none more so than our British Noctuæ. Some species, fairly common in Britain, differ entirely from the types on the Continent of Europe, and in some instances our ordinary forms have been named by Continental lepidopterists as varieties of the typical forms occurring with them. A very large percentage of British collectors know nothing of Continental Lepidoptera; hence they do not know how far our species agree with, or differ from, the forms generally distributed on the Continent of the same species. Many others have no idea of the range of variation of many generally-considered constant species, obtainable in certain districts of our own islands. Thanks in a great measure to Mr. South, there seems to be a much wider view prevailing than used to be the case, and many now take up the study of local forms of certain species, and are not satisfied with a series of six, eight, or ten specimens of each species, in fine condition, perfectly set, about which they know otherwise nothing. The majority of Continental lepidopterists take up the study from a much broader point of view than we generally do, and all treat Britain as a part of the European area. Our insects, therefore, find a ready place in their collections, and we find Continental lists containing large numbers of named varieties which are very frequently of British origin, such names being unfamiliar to lepidopterists in this country. Many of our lepidopterists object to any addition to the names already in our list, but those who really wish to take up the study from a scientific standpoint will see how necessary it is to keep in touch with Continental lepidopterists, especially as far as our own British species are concerned.

What does one learn from the statement "light" or "dark" form? What does it imply? It is much better to give every distinct form a varietal name and call it by such name. Now, if I capture an unfamiliar form of any species, and do not know whether such form has been captured previously or not, searching through our old entomological literature is like searching for the

proverbial "needle in the bundle of hay"; for if such a form should have been captured and noted, it would most probably be without a distinctive name and described as "a pale form," "a pretty form," or something equally vague. Naming varieties can easily be carried to extremes, and a local form should be compared, before a varietal name is given, with others of the species from many different localities.

I have spent a great deal of time studying the works of the old British and Continental authors, and working out the named varieties of those species that occur in Britain, and it is with the hope of inducing other lepidopterists to pay special attention to the local forms which occur in these islands, to chronicle such, and to extend their study to European forms generally, that I have determined to write a series of papers in the 'Entomologist' upon the principal varieties of those species of Noctuæ which occur in Britain, whether such varieties occur in Britain or not. Many collectors get a form of a species, sufficiently distinct in itself, but, having filled up their series with their own captures, never compare it with others, especially if it be a common species and not likely to be useful for exchange; hence they do not know that those of their own neighbourhood are at all different from forms attainable elsewhere. A more extended study of the subject may be the means of enlarging our knowledge of local forms, and show that widely distributed species have certain variations more widely distributed than is generally supposed.

In such a comprehensive article there must be necessarily a great many sins of omission and commission. I appeal to the readers of the 'Entomologist' who can help me, either with reference to named varieties in works or the loan of specimens of local forms, to do so, as a means of making these notes as clear as possible. Such help will always be most gratefully acknowledged.*

My friend Mr. Cockerell has written an article (Entom. xx. 150-152) embodying to a great extent my own views on the subject of varietal nomenclature. As no one has objected to his

* We have much pleasure in endorsing Mr. Tutt's request for assistance in this most desirable work. It will be necessary that all communications on the subject should be sent direct to Mr. Tutt, Rayleigh Villa, Westcombe Park, Blackheath, London, S.E.—ED.]

article or attempted to combat the view taken, I may, I believe, presume that the article meets the general views of most lepidopterists on the subject.

As many of our lepidopterists are still accustomed to consider the Cymatophoridae as a constituent branch of the Noctuae, I have included that family in the list.

CYMATOPHORIDÆ, H.-S.

This family does not seem subject to a very great deal of variation, and when it occurs is generally produced by the transverse lines crossing the anterior wings, coalescing and forming continuous bands. In some cases the ground colour is variable.

Gonophora, Brd., *derasa*, L.

α. var. intermedia, Brem.—This variety is of an ashy grey colour (*cinerascens*, Staudinger), and is only recorded, so far, from the eastern part of Dr. Staudinger's European fauna district, Amur and Armenia. Dr. Staudinger thinks this variety may be the *gloriosa* of 'Guenée's Noctuelles,' v. p. 12.

β. var. derasoides, Dobrée in litt.—“A very distinct variety, of a purple shade of grey, and no trace of white. From the Amur district.”—Mr. N. F. Dobrée, in litt.

Cymatophora, Tr., or, F.

α. var. flavistigmata, mihi.—Like the *var. scotica*, but the stigmata of a decided yellowish-orange colour. Captured with the ordinary Rannoch forms by Mr. Salvage in Rannoch, 1884.

β. var. scotica, mihi.—The ground colour of a paler grey, the costa often tinged with pink, and the lines both before and beyond the discoidal spots more strongly marked than in southern specimens. The females are much better marked than the males; the central area is in them generally very clear, and the union of the transverse lines into banded form more complete. On the other hand, the stigmata are generally less distinct in the northern form than in our southern specimens. This species is one that presents a reversed order of the general condition obtaining amongst Scotch Lepidoptera, where melanism is so prevalent. In a long series (24) of Rannoch specimens I have none so dark as my Kent specimens.

Cymatophora, Tr., *duplaris*, L.

α. var. argentea, mihi.—The ground colour of this variety is of a silvery white, instead of the prevailing grey, the transverse lines being very distinct. This form bears a slight, superficial resemblance to the allied *C. fluctuosa*. I have to thank Mr. Kane for specimens which came from Ireland. I have since received similar specimens from Lincolnshire.

β. var. obscura, mihi.—The anterior wings of an almost unicolorous leaden grey. Occurs in Rannoch.

Cymatophora, Tr., *diluta*, F.

Var. *nubilata*, Robson and Gardner's List (1885).—The ground colour is much darker than in the type, and the dark transverse lines which cross the anterior wings are united so as to form three (three or four, Robson) decided bars across the anterior wings. The colour of the bars and basal blotch is a rich chocolate-brown. My specimens were obtained in Yorkshire, and came from Mr. J. Harrison, of Barnsley. The form is figured in Newman's 'British Moths,' p. 240 (upper figure).

Asphalia, Hb., *flavicornis*, L.

Var. *scotica*, Staudinger.—The ground colour is of a very much darker grey than in the type, although the ordinary markings are very distinct. It is the usual Rannoch and Perth form, hence its name. I have also received it from Yorkshire, where it is occasionally captured with the type.

Asphalia, Hb., *ridens*, F.

Var. *interrupta*, mihi.—In this variety the base is pale, the dark, central, transverse band on the anterior wings is broken up by a pale patch extending through it from the costa to the inner margin, the dark band being represented by two dark lines on either side of this pale patch. The type is figured in Newman's 'British Moths,' p. 243, and has a dark central band across the anterior wings. I have specimens of var. *interrupta* from all localities whence I have obtained the type.

BRYOPHILIDÆ, Gn.

This small family is subject to a very great deal of variation, owing to the suffusion of the anterior wings with coloured scales,

and the difference in the depth of colouring of the ordinary markings. Our two common species, *Bryophila muralis* and *B. perla*, are especially variable, as is also *B. alge* on the Continent of Europe.

Bryophila, Tr., *muralis*, Forst.

Of this species there are several distinct forms, joined by intermediate varieties. That figured in Newman's 'British Moths,' p. 244, is the type and is suffused with green.

α . var. *par*, Hb.—This variety is without the dark markings which characterise the type; the green is of a very pale shade and much mixed with grey, giving the insect a very mealy appearance. It is not so common as the type, but occurs occasionally in most (if not all) localities with it. I have this variety from Cardiff, and have captured it at Folkestone, Deal and Sandwich.

β . var. *viridis*, mihi.—Like var. *par*, this has the black markings very indistinct, but there is in addition a total absence of the grey colour which gives var. *par* its mealy appearance. The whole of the fore wings are of a very rich green colour. I have beautiful specimens from Folkestone, captured by Mr. Austin, and some exceedingly rich specimens captured at the same place by Mr. Wellman are in the cabinet of Mr. Tugwell.

γ . var. *flavescens*, mihi.—Like the type, but with the ground colour of a yellow shade instead of green. I used to think these were faded until I bred specimens from larvæ taken at Deal which had no green in the ground colour.

δ . var. *pallida*, mihi.—Marked like the type, but the ground colour of a pale whitish grey. I have this form from Deal and Folkestone.

ϵ . var. *obscura*, mihi.—The ground colour of a dull brownish grey, markings obscure, as in var. *par*, and a little darker than the ground colour. It is the darkest and most obscure form of the species I have seen. The type of this var. was captured by Mr. Austin at Folkestone. I took one specimen of the same form at Sandwich, in August, 1886. Herr Hoffmann (Hanover) has specimens of this variety in his collection from the Simplon (Swiss Alps).

Bryophila, Tr., *impar*, Warren.

Impar must not be confounded with *B. muralis*, var. *par*, Hb., as it is quite distinct from that variety. Many lepidopterists

consider this a local form of *muralis*, but with this opinion I am not inclined to concur, as those types that I have seen have the transverse markings somewhat different to those in *muralis*, but this difference may not hold in a long series.

Bryophila, Tr., *perla*, F.

α. var. flavescentis, mihi.—In this variety the whole of the anterior wings are strongly suffused with ochreous or orange-coloured scales. I have taken a long series of this very pretty form at Deal. On some walls it is almost as common as the type. These walls are covered with orange-coloured lichens, and there seems little doubt that in this case the orange-colour of the variety is protective.

β. var. suffusa, mihi.—The grey reticulations and marbling, which are pale in the type, are in this form very dark bluish black, and suffuse the whole of the wing, absorbing almost all the usual markings; the discoidal spots are, however, very dark. The hind wings have the space between the two black parallel lines very much obscured, so as to form a broad dark band; the veins of the hind wings very dark. I have a fine series of this form from Strood and Deal. The few Yorkshire specimens I have of *perla* are all of this form. There is no doubt that this form is Guenée's var. A., 'Histoire des Insectes,' v. 28.

γ. var. distincta, mihi.—The ground colour is white, and the discoidal spots dark grey. A grey shade directly under the orbicular, four short dark dashes near the centre of the costa, a short basal streak and a grey shade on the costa near the tip of the wing, are the only markings. The form is almost entirely without the grey marbling of the type. I have six specimens in my own series, four from Strood and two from Deal. I have occasionally seen a specimen in other series, but the form is by no means common.

Bryophila, Tr., *algæ*, F.

α. var. mendacula, Hb. 520.—This variety is "smaller, paler, and greyer than the type."—Stdgr.

β. var. calligrapha, Bkh.—The anterior wings "much suffused with yellow or orange scales."—Stdgr.

γ. var. degener, Esp.—The anterior wings of this variety are "unicolorous, and of a dark green colour."—Stdgr.

BOMBYCINÆ, Bdv.

The chief genus of this family is the *Acronycta*. In this genus we find two distinct types of ornamentation, the typical forms having a pale grey or white ground colour with black or brown markings; the varietal forms are more or less suffused with the darker colour to the exclusion of the paler ground colour, thus making the markings more obscure, and giving the insect a much darker or banded appearance.

Moma, Hb., *orion*, Esp.

Var. *runica*, Haw.—Less strongly marked than the type and has altogether a lighter appearance. There is a figure of this variety in Newman's 'British Moths,' p. 247. Mr. Newman's remarks, p. 248, show that he believed this variety would ultimately prove to be a distinct species.

Acronycta, Och., *tridens*, Schiff.

Var. *virga*, mihi.—The ground colour rather darker than in the type; the space in the anterior wings between the hind margin and the transverse line containing the \downarrow -like mark much suffused with dark scales, giving it the appearance of a band, the space between the black basal streak and the inner margin much suffused. There is a figure of this variety in Newman's 'British Moths,' p. 248, second figure.

Acronycta, Och., *psi*, L.

α . var. *bivirgæ*, mihi.—The anterior wings darker than in the type, the space between the hind margin and the transverse line containing the \downarrow -like mark completely suffused with black scales; the basal part of the wing also completely suffused, so that the insect has the appearance of two bands crossing these wings. This beautiful variety was captured on the racecourse at York by Mr. J. T. Carrington, and is now in the collection of the late Mr. Sidebotham.

β . var. *suffusa*, mihi.—The whole of the ground colour is much suffused with dark scales, giving the insect a very dark appearance. The posterior wings are also much darker than in the type in both sexes. This is the form generally, if not always, taken in the London district, and occasionally found in

most of the woods within a few miles of the metropolis. I have never taken the pale type in my own district (Blackheath), although it is common enough in Darenth, Chattenden, and other woods only a few miles off, in which the var. *suffusa* is rarely seen.

γ. var. *cuspis*, Stephens (non Hb.).—There is a continental species of this name closely allied to *A. psi*, which species (*cuspis*, Hb.) Stephens undoubtedly considered the variety of *psi* he described to be. This proved not to be so. Stephens' name therefore has been retained as the varietal name to *psi*. His description is:—"Very similar to the last (*A. tridens*), but rather larger, cinereous, with a black lateral thoracic line; anterior wings greyish white, a little tinted with luteous, with a strongly ramose black lineola at the base, and a powerful black undulated posterior striga, in which are two black ψ-like marks; the stigmata are nearly as in the last (*tridens*), and the cilia whitish ash, spotted with black; posterior wings whitish, with a dusky central lunule; a transverse striga beyond the middle and posterior fimbria." I have specimens in my cabinet labelled Chattenden, July, 1885 and 1886, which answer exactly Stephens' description; also one taken on the Shooter's Hill Road in July, 1886. The specimens are all large and characteristic.

Acronycta, Och., *leporina*, L.

α. var. *bradyporina*, Tr.—This was treated by our early lepidopterists as a distinct species. It is very much suffused, and has scarcely any trace of the white colour which characterises the type, the colour of the anterior wings being of a dark uniform grey. The black markings are of necessity less pronounced, and blend with the general ground colour. This variety is represented in the second figure in Newman's 'British Moths,' p. 251. The type of this species, *leporina*, has the ground colour of a pure white. Most of our specimens would be referred by Continental lepidopterists to var. *bradyporina*. Nearly all my series are of the grey form. In Entom. x. 129, the late Mr. Prest writes:—"I have taken *A. leporina* for nearly twenty years, but never took the pale form near here (York); ours are all the variety *bradyporina*." Mr. Dobrée, of Beverley, also tells me that is so throughout the E. Riding of Yorkshire. In Entom. x. 93, the late Mr. Nicholas Cooke writes:—"In this neighbourhood (Liscard) we take *leporina* of a tolerably

deep grey colour; at Loggan it is beautifully white, with the characteristic marks dark."

β. var. semivirga, mihi.—The same ground colour as in the type, but the space between the undulated transverse line parallel to the hind margin, and the hind margin, is suffused with black scales, especially towards the line. This gives the variety the appearance of having an exterior band, although not so broadly developed as in the almost parallel varieties of *psi* and *tridens*. This variety is represented in Newman's 'British Moths,' fig. 3, p. 251. It may be worthy of remark that *tridens* has only a banded variety, *psi* and *leporina* both banded and suffused varieties, while the remainder of the genus have only, so far as we at present know, suffused varieties.

γ. var. rosea, Engr.—Guenée describes a variety under Engramelle's name "*La Rose*," as having "the superior wings and abdominal incisions of a bright rose," and says of it, "this charming variety is very rare."

Acronycta, Och., aceris, L.

Var. candelisqua, Esp.—This also is a very dark suffused form, the suffusion consisting of an immense number of brown scales scattered over the wings. All the markings are very obscure, being almost lost in the darker ground colour, with the exception of the transverse line, which shows up distinctly as a series of dusky arches or curves across the wing. This was also considered as a distinct species by our early lepidopterists. Newman figured it in 'British Moths,' p. 251, second figure.

Acronycta, Och., megacephala, De Geer.

α. var. turanica, Stdgr.—A species of this name is found in Staudinger's list between *euphrasie* and *rumicis*. The locality given is Turkestan. Mr. Dobrée writes me that this so-called species "is nothing more than a light-coloured form of *megacephala* from Turkestan."

β. var. rosea, Engr.—Guenée describes this variety as follows:—"Superior wings of a pale (whitish) rose, with all the markings very distinct." He also says, "this variety is frequently reproduced. I have seen several examples."

(All our British specimens of this species are darker than those from the South of Europe and Asia.)

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ABUNDANCE OF PIERIDÆ.—I can fully corroborate the accounts which have lately appeared in the 'Entomologist' about the abundance of the Pieridæ during the past summer. I have hardly ever seen them before in such extraordinary numbers as they were at the beginning of August last. On the 6th of that month I was at Hurstpierpoint, and in going along a lane I came upon a small pool, the remaining water in which had apparently only just been dried up, for the mud was just moist. This was covered with scores of "whites," which were regaling themselves upon its foul delicacies, while a perfect cloud were hovering in the air above. It was a remarkable sight, for they must have been in countless numbers, as this white cloud of hovering butterflies caught my attention when some distance from the pool. I was not altogether surprised at the phenomenal abundance of the butterfly this season after the enormous quantity of larvæ that I noticed last autumn (Entom. xix. 299). This autumn, however, although the imagos have been so plentiful all the summer, I have seen hardly any larvæ at all, and have been struck by their entire absence in some localities. I have not, I may add, seen *Colias edusa* at all this year, and have found *Vanessa atalanta* remarkably scarce, having seen only about six specimens in all. I have also failed to meet with a single *V. cardui* for the second summer running, although I found it so common in 1885 wherever I collected.—W. H. BLABER; Beckworth, Lindfield, Sussex, November 3, 1887.

COLIAS EDUSA.—I had not seen a living specimen of *Colias edusa* since the great year 1877, until the year before last, when I captured a fine specimen of var. *helice* in the "Devil's Ditch," close to Newmarket Heath. Last year my late father saw two in "Flem Dyke," Fulbourn, one of which was captured by a young friend collecting with him.—W. FARREN; 14, King's Parade, Cambridge.

VANESSIDÆ IN THE BLACK COUNTRY.—Although I have been a collector of Lepidoptera for a great number of years in this part of Staffordshire, I never saw *Vanessa io* till 1884, when I saw a few specimens flying about in the August of that year. In July, 1885, I found four numerous broods of larvæ, about two

miles from this town. From this I came to the conclusion that it would establish itself here. The next season, through a long severe attack of illness, I was debarred from making any observations whatever. During the present season I have been able to take the field again, and I was much pleased to find that *V. io* was flying in various parts of the district in great plenty. On August 28th, while taking a walk along a brook-side which runs among the old pit mounds so numerous here, I saw it in good numbers in company with *V. urticæ* and *Polyommatus phlæas*, and with several species of dragonflies, flying along the brook-side, the whole forming a picture rarely to be seen among these dreary wastes, where very few flowers are to be found growing. The damp tufts of grass, and the coltsfoot leaves growing by the side of the stream, seemed to be the attraction. I have also found *V. atalanta* and *V. urticæ* in great abundance. Other species of Lepidoptera have been more abundant this season than formerly, more especially *Pieris rapæ* and *P. brassicæ*, the former in countless numbers, both in the larval and perfect state; a great number of the larvæ have been destroyed by ichneumons.—THOS. HILL; 15, Russell Street, Willenhall, October 13, 1887.

LYCÆNA CORYDON IN CUMBERLAND.—This butterfly used to occur at Grisedale, at the foot of Saddleback, in Cumberland. I have seen some specimens taken there by the late Mr. Hope, of Penrith. That is a locality far away from chalk.—J. B. HODGKINSON; Ashton-on-Ribble, Lancashire, December, 1887.

DIURNI, &C., IN SWITZERLAND.—The following notes, taken in Switzerland during the past month of July, of some of our own Lepidoptera, may be of interest. *Papilio machaon* I saw throughout the month in lower and upper valleys, also near towns, but, as far as I was able to observe, not very abundant; on July 8th I noticed a female laying eggs on the wild carrot; on one occasion I noticed this butterfly at a somewhat high elevation, namely, on the Riffelberg, near Zermatt, over 7000 feet above the sea. *Pieris rapæ* swarmed at the lucerne and clover fields in cultivated districts; on the evening of July 29th, after sunset, several specimens of this butterfly came wearily from off the lake of Neuchâtel, having evidently crossed from the opposite bank miles across. On July 13th I saw three fine male specimens of *Euchloë cardamines* near Zermatt. *Colias edusa* and *C. hyale*

appeared to be just coming out at the end of the month near Berne, but were not to be seen in any numbers. On July 28th I watched a female of *Vanessa c-album* depositing eggs on the leaves of the wych elm. Worn specimens of *V. antiopa* were seen in small numbers at the commencement of the month in one locality only, the beautiful borders of the wings being much tattered and discoloured. *V. urticae* was very abundant in one or two valleys. One specimen only was seen of *V. atalanta* and *V. cardui*. *Lycæna icarus*, with the exception of two specimens, did not appear until the end of the month; there appeared to be no stragglers of the early brood. On July 8th I saw a female *Lycæna arion* deposit eggs on the wild thyme; the plant appeared a somewhat larger kind than our own. *L. semiargus* was partial to moist situations, sometimes in open places of that character in woods; I was quite unable, however, to watch any females depositing eggs. *L. ægon* was very abundant in a few localities visited. Of the Heterocera my observations were confined to those seen by day or the early evening. On July 10th *Cossus ligniperda* was seen at rest on elm. *Leucoma (Liparis) salicis* I noticed in great numbers on July 11th over willow bushes, branches being covered with them. On July 17th *Ematurga (Fidonia) atomaria* was abundant at Gletsch, near the Glacier du Rhone. I also noticed near here some dark specimens of *Nemophila plantaginis*, the yellow colour on the lower wings being absent. *Tanagra atrata (chærophyllata)* might be seen flitting about in almost countless numbers in several valleys amongst the long grass. Referring to the "whites," it appears a remarkable season for them in *this* country. On the Cotswold Hills in many places they now swarm,—in gardens, fields, and woods,—more particularly *Pieris rapæ*; fifty have been counted at one small plant of lavender.—T. B. JEFFERYS; Clevedon, Cirencester, August 9, 1887.

SPHINX CONVULVULI TWO YEARS IN PUPA.—In August, 1886, a friend found two larvæ of this insect, which he promptly placed in a box for me, without food of any description. One, however, survived, and managed to pupate. I expected the imago to emerge this season (1887), but it did not, and is now to all appearances perfectly healthy, but has not manifested any intention of altering its present condition. Is it an unusual thing for this insect to spend more than one year in the pupa?—

M. STANGER HIGGS; The Mill House, Upton St. Leonard's, Gloucester. [It is most unusual to find the larvæ of *Sphinx convolvuli* in this country. Is our correspondent quite sure of its identity? Many moths lie over their usual season for emergence, and remain for a second year or more in pupa; and doubtless this might happen with *S. convolvuli*.—ED.]

SPHINX CONVULVULI ABUNDANT IN CORNWALL.—During September I captured thirty-eight specimens of *Sphinx convolvuli* here, and let others go. They were all hovering about the flowers of *Nicotina affinis*. The most I took in one evening was eight specimens.—H. W. VIVIAN; Bosahan, Helston, Cornwall.

SPHINX CONVULVULI.—I observed this species on the evening of August 28th, and again September 7th, 1887, flying over the flowers of marvel of Peru (*Mirabilis jalapa*) in my neighbour's garden, and a friend of mine had a specimen brought him which flew into a house near here. The flower named is particularly attractive to this insect, and should be grown by collectors desirous of taking it. In 1875 a very large number of this species were captured, flying over a patch of the plant in a nursery-garden close to Victoria Park Station on the North London Railway. The place is now a railway-siding for coals, &c., which are not likely to attract either *convolvuli* or collectors. — C. J. BIGGS; 3, Stanley Terrace, West Ham Park, E., December 20, 1887.

PUPATION OF COSSUS.—Adverting to the question of *Cossus ligniperda* pupating in the earth (Entom. xx. 231—234), I might say that I have had several larvæ given to me during the last three years, which were dug up from a cottage-garden near Stamford Hill, north of London. They were some distance from any tree, and I have now four found in the same way. Neither Newman nor Morris give the time when they pupate, and Merrin's 'Lepidopterists' Calendar' leads me to think that the pupa is to be found from November to May; but those I have bred did not change till some time in May, and the perfect insects came out about six weeks later. As Merrin points out, the larva is very subject to mildew, which means certain death.—F. MILTON; 164, Stamford Hill, London, N.

ASSEMBLING OF MALES OF BOMBYX QUERCUS.—On August 1st last I bred a crippled female of *B. quercus* from a pupa which had

remained in the cocoon all the winter. I was staying at Groombridge, and the day being very hot and one suitable for collecting Diurni I started off to walk to Crowborough Beacon, a distance of some miles. Thinking that perhaps the female might attract a male or two on the way I took her with me, having first placed her in a chip-box with a piece of gauze over the top instead of a lid, and this box was in turn placed inside a small zinc collecting-case and consigned to one of my pockets. I met with several butterflies on the way, and had entirely forgotten that the *B. quercus* female was in my pocket, until, having arrived at Crowborough and whilst standing on the stone which marks the spot where the beacon fires were lighted in the old days, I was surprised to see a male flying round and round, dashing towards me, and then again going away in a most excited fashion. I was at a loss to account for this strange conduct, until I recollected the female which I had placed in my pocket on starting, and which doubtless was now the cause of the wild performance. My attempt to net this individual was unsuccessful, after which he took his departure. I now took the female moth from my pocket and from the zinc box; and having arrived at the southern slope of the beacon, which is very heathy and scattered with numerous gorse bushes, I sat down, after placing the chip-box containing the moth on the top of a gorse bush close by. I had hardly been settled three minutes before I observed a male flying wildly around and gradually approaching the box, whereupon I netted him. As long as I remained at the spot, which was for about half an hour, there was a constant flow of suitors for the moth imprisoned in the box, there being sometimes as many as three at the same time all darting about and encircling the bush on which I had placed the box. On my return journey I carried the female in my net, and succeeded in luring several males from the hedges as I passed. The sudden and unexpected way in which they appeared was most remarkable, for one could never see whence they came. One would see a large insect careering wildly about in front; the next instant it would dash past, but immediately turn and follow in my wake; and if I placed the box on the ground (which I generally did when I saw a male approaching) it gradually drew, in a zigzag flight, near the object of its attentions, and when close to the box it would perform a regular war-dance on the ground, jumping up and down as if it

were possessed of springs on its feet. It was quite a laughable sight to see one of these insects thus engaged dancing in this manner. By the time I had reached home I had attracted by this one female no less than twenty-two males, six of which I netted.—W. H. BLABER; Beckworth, Lindfield, Sussex, Nov. 18, 1887.

BOMBYX RUBI.—On October 8th, as I was crossing Bexley Heath, near Ipswich, with my friend W. H. Collins, we saw some larvæ of *Bombyx rubi* in the grass and took 131 of them, which we intend to try and rear; another friend has also taken 100, and there remain now on the heath many more. Is not this abundance rather extraordinary?—A. C. FREEMAN; 38, Foundation Street, Ipswich, Suffolk.

CIDARIA SAGITTATA.—When my late father and I were collecting in the "Fen," the year before last, we secured a good many larvæ of *C. sagittata* about the Fen, and one day my father came upon an isolated plant of *Thalictrum flavum* right off the Fen, made up of about eight stems. He noticed it was eaten very much, and took about 150 larvæ of *sagittata* from it, and we ultimately took from that single plant upwards of 400 larvæ; they had eaten all the seed-heads and leaves, and even the bark of the stems. They were of all ages, so I have no doubt some had already gone down to pupate.—WM. FARREN, Jun.; 14, King's Parade, Cambridge.

NOTODONTIDÆ DOUBLE-BROODED.—Mr. Lea may be interested to learn (Entom. xx. 275) that I captured on the 23rd August last, at Wandsworth Common, two fairly perfect specimens of *Notodonta dictæa*, a moth which appears normally during May and June. I may also mention the occurrence here of a fresh *Gortyna ochracea* on the 7th October, and two very fresh specimens of *Miselia oxyacanthæ* on the 19th ultimo. Besides these examples, I have noticed many others less striking; and from their frequency I am inclined to think that none of the insects belonged to second broods, but had merely suffered retardation of their emergence, and I may add that I failed to meet with any of the moths at their usual times of appearance.—J. SUTTON; 19, Shelgate Road, Wandsworth Common, S.W., October 26, 1887.

ACRONYCTA ALNI IN SUSSEX.—During my stay at Groombridge last summer I found, on August 29th, a larva of *A. alni*, which was crawling on the doorstep of the house. Unfortunately it

proved to be ichneumonid, and died, after feeding on sawfly for a few days.—W. H. BLABER; Beckworth, Lindfield, Sussex.

ACRONYCTA RUMICIS DOUBLE-BROODED.—On July 20th last I found a larva of this insect feeding on bramble. It spun up almost directly, and on the 6th of August the perfect insect emerged. Is it not an unusual thing for this moth to be double-brooded?—G. BAILEY; 16, Kensington, Bath, December 8, 1887.

THE FEMALE OF CLEDEOBIA ANGUSTALIS.—With reference to the note by Mr. Tutt (Entom. 17, 18), I may mention that I have had abundant proof that the female of *C. angustalis* is, at all events under certain conditions, quite capable of flight; though, as a rule, it seems very loth to make use of its wings. I have, at different times, taken an occasional specimen on the wing; and on an oppressively hot afternoon, July 25th, 1885, I noticed that the females were flying rather freely between 4 and 6 p.m., with a peculiar zigzag flight. This phenomenon was in all probability due to the excessive heat, and is particularly mentioned in my diary as an "unusual occurrence." Although the males are so common, and easily procured through exchange, it is not surprising that the other sex is unrepresented in many cabinets, as from its retiring habits it is, unless specially worked for, only to be taken very sparingly. But any entomologist who collects regularly in one of the many districts where the species abounds, will be unlucky if he does not occasionally meet with the narrow-winged female.—E. R. BANKES; The Rectory, Corfe Castle, January, 1888.

AGROTIS FENNICA.—The very interesting article (Entom. xx. 314) by Mr. Dobrée, upon *Agrotis fennica*, reminds me of the specimen which brought this species into the British list, and which still remains the only example known to have been captured in this country. It was taken about forty years ago by a collector named Beresford, who was a miner, near Chesterfield, in Derbyshire. The late Thomas H. Allis, of York, obtained it from him, and it is now in the Allis Collection in the York Museum. Beresford worked hard to take others, but failed; and sugaring was not much understood or practised in those days.—J. B. HODGKINSON; Ashton-on-Ribble, Lancashire, Dec., 1887.

POLIA XANTHOMISTA IN CORNWALL.—I have obtained two specimens of *Polia xanthomista* in Cornwall; one taken in a

house near Truro, and the second in the gamekeeper's house here. They are both females, and the latter laid a good number of eggs.—H. W. VIVIAN; Boshahan, Helston, Cornwall, Jan. 11.

A LONDON FORM OF MELANISM.—As Dr. Rendall's remark (Entom. 202) as to the complete absence of any London form of melanism seems to pass unchallenged, it may be worth while to mention one good instance of melanism that came under my notice last year. Mr. S. T. Klein, during the summer of 1886, found *Miana strigilis* in considerable abundance in his garden at Willesden, and nearly all the specimens were of the melanic variety *æthiops*, the type being rare. Whether this form has only become prominent in the district of comparatively late years, like the *Amphydasis betularia* var. *doubledayaria*, about Manchester and other localities in the north, I do not know; and it would be of extreme interest to have the experience of anyone who collected years ago in the west metropolitan district on this point; but it is at least a case of London melanism which ought not to be overlooked.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, October 20, 1887.

RETARDED EMERGENCE.—I took two *Gortyna ochracea* on the wing during the latter end of September. They were attracted by the light of my lantern, and thus enabled me to capture them. Is not this rather an unusual time for this species to be out?—CHAS. E. G. PHILLIPS; Castle House, Shooter's Hill, Kent, October 8th, 1887.

EUPITHECIA CURZONI?—Is this a species or a variety? In vol. xviii., p. 230, of the 'Entomologist' will be found a description of this insect as a "*Eupithecia* new to science." For this, and not a few other new species, we are indebted to the liberality of Mr. C. S. Gregson. He gives us an elaborate description of imago, larva, and pupa; tells us that "it has nothing common (*sic*) in appearance with that genus (*Eupithecia*), except perhaps its shape"; and finally announces that "this will be called Curzon's pug." So far, so good. At page 276, however, of the same volume we find a reply to this from Mr. H. McArthur. He, it appears, and not Mr. Curzon (as one would gather from Mr. Gregson's account), discovered the insect in 1880. "In 1883," writes Mr. McArthur, "I determined to work the extreme northern islands of the Shetland group, and succeeded while

there in not only capturing the imagines in plenty, but also in breeding this variety in quantities, and afterwards sent them to our most eminent entomologists, who all agreed with me in thinking it a very interesting variety of *E. nanata*. After many opportunities of observing it both in the larval and imago states, I must record my strong opinion that it is nothing more nor less than a variety of *E. nanata*. Mr. Gregson must have been perfectly aware of all these facts; and even allowing that it is a distinct species, which I am sure it is not, unless he received Mr. Curzon's permission to use his name, which I doubt, I think entomologists will agree with me that he has shown somewhat questionable taste in naming it after a gentleman who has collected but one season in the far north." At p. 52, vol. xviii., we find, from Mr. Gregson, the following quotation, and I must ask for careful attention, as Mr. Gregson seems to think the argument unanswerable. The italics are mine. . . . "When looking over Mr. Curzon's captures here, he again called my attention, as he had before done by letter, to the fact that hardly two of his long series of *E. curzoni* were alike, and that very often the two upper wings differed in pattern, &c. Now for *E. nanata*, I do not know a more *constant* pug. I have only seen *three* varieties of it; they are all in my cabinet, but only *one* of them is a striking variety; yet I have bred and looked carefully over many *thousands* of bred and captured specimens for *varieties*." Once more, so far so good. Now it is my custom, at the close of each year, to recall old recollections by reading over my books on Natural History. While thus occupied, a day or two ago, I came across the following under the heading "Observations on Eupitheciæ, by Mr. Gregson." After a few remarks on *linariata*, *rectangularia*, &c., comes *nanata*, the *most variable*!, the most abundant, and perhaps the handsomest pug we have both in the larva and *perfect* state!" (*vide* 'Intelligencer,' vol. iv., p. 134, 1859). Which of these statements are we to accept? In 1859, "the most 'variable' pug we have;" in 1884, "I do not know a more 'constant' pug, having only three varieties out of many thousands," &c. I have always, in common I believe with most entomologists, considered the so-called *curzoni* as a northern variety of *nanata*, but I am now entirely outside the entomological world, and have scarcely any correspondents. I should, therefore, feel obliged for the opinions of competent and

experienced judges on this matter. In lists that are occasionally sent to me I observe "*Eupithecia curzoni*" sometimes with, sometimes without, a note of interrogation. For myself I call it "*E. nanata* var. *curzoni*."—[Rev.] JOSEPH GREENE; Rostrevor, Clifton, Bristol, January 2, 1888.

BUTALIS CICADELLA.—In the beginning of July this year, while collecting on the "breck-sands," I was lucky enough to take a fine specimen of *Butalis cicadella*. Before I killed it, and for some little time after, the markings were very distinct; they are now not nearly so plain, the cause of which I attribute to the ammonia used for killing it. A peculiarity of this species is the extraordinary length of the tongue or trunk, which is quite half an inch long. I only know of one other record of its capture many years ago by Mr. T. Brown. Can any one give me information as to how many have been taken?—W. FARREN, Jun., 14, King's Parade, Cambridge, November 14, 1887.

AGRION PUELLA, &c., AT WINDERMERE.—During the first week in August I visited the Windermere district, and met with *Agrion puella* in immense abundance on the borders of the lake. *Phryganea* were to be seen in countless millions early in the morning, dancing in clouds all round the lake.—W. HARCOURT BATH, Ladywood, Birmingham.

COLLECTING IN SOMERSETSHIRE.—Whilst collecting Lepidoptera in the neighbourhood of Wellington, Somerset, in July last, I one day saw about two dozen of *Argynnis paphia* at the flowers of the lime. Are they usually at these trees when growing near their haunts? I saw no other Lepidoptera on the flowers. *A. paphia* was very plentiful in an adjoining wood and other woods near, as was also *Leucophasia sinapis*. *Thecla rubi* was plentiful in one of the woods, and some on the open heath, or rather hill. From the year 1885 and the present year it seems that the early part of July is the season for them here. I also took *Thyatira derasa*, *T. batis*, *Plusia chrysitis*, *Uropteryx sambucaria*, *Epione apiciaria*, *Angerona prunaria*, *Cleora lichenaria*, *Geometra papilionaria*, *Acidalia imitaria*, *Timandra amataria*, *Macaria alternata*, *Melanthia albicillata*, *Cidaria picata*, *C. prunata*. I have also, *Pericallia syringaria*, *Trichiura crategi*, *Cossus ligniperda*, *Sphinx convolvuli*, *S. ligustri*, *Smerinthus ocellatus*, *S. tiliae*, *Macroglossa stellatarum*, &c., from that neighbourhood. *Sphinx convolvuli* has

been taken in the town the last three autumns. One was seen by a lamplighter on the framework of a lamp; he was quite terrified at the sight of such a huge insect, with such large prominent eyes. He ultimately took the moth and put it in his tobacco-box; it is needless to add that it presented anything but a respectable appearance when released from its prison. My Coleoptera from Wellington, included *Cicendela campestris*, *Lebia cyanocephala*, *Rhynchites betuleti*, *Leioporus nebulosus*, *Prionus coriarius* (3), *Troxotus meridianus*, *Pachyta albomaculata*, and *Strangalia armata*.—F. MILTON; 164, Stamford Hill, London, N.

LEPIDOPTERA IN THE CHANNEL ISLANDS. — Friday, the 3rd of June, 1887, found my brother and myself *en route* for Jersey. Fortunately it proved the last day of the wet period which came in with the month of May, and the 4th of June began that fine spell which lasted, with but slight breaks, right on to the middle of August. Arriving by midday on Saturday, the 4th, at St. Heliers, we took a prospective walk into the interior of the island. Here I should state that the weather in Jersey and the Channel Islands generally had scarcely differed from that experienced in the South of England, having been wet and cold up to the time of our arrival. We noticed *Pieris brassicæ* and *P. rapæ* commonly in the gardens and lanes, and *Pararge egeria* was also common about the shadier spots. A visit to St. Brelade's Bay in the south-west produced more *P. egeria*, *P. megæra*, and *Cænonympha pamphilus* commonly; *Thecla rubi* in good condition and common; *Lycena icarus* and *L. astrarche* in fair numbers, the latter occurring on marshy spots, and varying from English specimens on the under side in having a much lighter ground colour. From the Corbière, in the extreme south-west, we had *L. icarus* and *T. rubi* abundantly and in good condition, and these two species were also the commonest, along with *P. egeria*, in the northern and eastern parts of the island. No traces of such ordinary English species as *Euchloë cardamines*, *Gonepteryx rhamni*, *Argynnis euphrosyne*, *A. selene*, *Syrichthus malvæ*, and *Nisoniades tages*, and of these only *G. rhamni*, according to the local lists, is now found on the island. One specimen of *Vanessa atalanta* crossed our path in the north-west; and from the Quenvais, a waste tract on the west side, according to guide-books "dreary," but when we saw it, covered with wild roses and anything but dreary, we took several specimens of *Euchelia*

jacobææ, but were too early for *Melitæa cinxia*, which is said to occur abundantly. A single specimen of *Smerinthus ocellatus*, found hanging to the tip of a blade of grass, and two or three *Mamestra brassicæ*, two *Iodis lactearia*, an *Acidalia*, and two *Bombyx quercus* larvæ complete the list of species noticed in Jersey. On the morning of Tuesday, the 14th, we left for Guernsey. Here, at St. Peter's, we soon became aware of the more English character of the insects, being greeted by numbers of *Lycæna argiolus* on the borders of the town, and falling in with *Epinephele ianira* for the first time; *P. brassicæ*, *P. rapæ*, *P. napi*, common; *P. icarus*, *Polyommatus phlæas*, fairly so; but *T. rubi*, so common in Jersey, was quite over; *P. megæra* and *P. egeria* commonly; but of *C. pamphilus* none, for the very good reason, strange as it may seem, that this insect is not found at all in Guernsey, though common enough in all the other islands. A visit to Sark, on the 16th, introduced us to *Melitæa cinxia*, which was flying fresh and fine in all parts of the island, being very common close to the landing-place, and also near the famed Coupée. The island of Sark, although under four square miles in area, contains, we were informed, nearly the whole of the insect fauna of Jersey and Guernsey, and it certainly was an entomological paradise on the day we visited it. Insects were in profusion, and we had some difficulty in distinguishing between specimens of *P. megæra* and the more aristocratic *M. cinxia*. All the other species enumerated above were noticed, *L. icarus* being perhaps the commonest, and besides two more larvæ of *B. quercus* were obtained. Searching the south-east coast of Guernsey we came across *M. cinxia*, on the rough headland known as the "Gouffre," and also in "Petit Bot" Bay; but owing to windy weather the specimens were somewhat worn. From the inn-keeper at Petit Bot Bay we had a specimen of *Callimorpha hera*, one of forty he had collected in two years off an elm tree facing the inn. During two hours' stay on the island of Herm, on the afternoon of the 18th, we noticed *V. atalanta*, *C. pamphilus*, *L. argiolus*, *L. icarus*, and *E. jacobææ*. We left Guernsey for Southampton on the morning of the 21st, and arrived home before midnight, having thoroughly enjoyed both the trip and the experience of novelty in collecting the early summer species of the Lepidoptera of the Channel Islands.—F. W. HAWES; 14, Dovecote Villas, Wood Green, N.

RIPE PLUMS A BAIT FOR INSECTS.—I could not make out why the bats flew in and out of the plum-trees, and I could not make out why there were no moths on my sugar; but putting the two negatives together I became positive that the bats were eating moths and the moths were eating plums. So I spent the next afternoon in setting up every available means of access to the plum-trees, not only the standards but those on the walls; and in the evening reaped a rich reward, finding all the moths in the country side feasting where the flies and wasps had feasted in the daytime. The most prominent were *Hadena protea*, *Anchocelis pistacina*, and *A. litura*; but there was a fair sprinkling of *Xanthia citrigo* and *X. glavago*, with odd specimens of *Agrotis segetum*, *Luperina testacea*, *Gortyna ochracea*, *Polia flavicincta*, *Noctua plecta*, *N. c-nigrum*, *N. xanthographa*, *Xanthia circellaris*, *X. gilvago*, with an early *Miselia oxyacanthæ* or two, this last being new to me here. Is this method of capture generally known? I wish I could have published my details in time to have been of use to others, but hope they will prove serviceable for next season.—G. M. A. HEWETT; Beckworth, Lindfield, Sussex.

THE COLORADO BEETLE.—When I came out to Colorado I thought that there was one insect at least that I could rely upon finding—the *Leptinotarsa (Doryphora) decemlineata*, Say, commonly called the “Colorado beetle” or “potato-bug.” But strangely enough, I have travelled over a large portion of the State, both on the eastern and western sides of the Rocky Mountain range, and not only have failed to meet with it, but find an almost complete ignorance of its existence amongst the natives; and in many cases, from descriptions given, it is evident that the supposed Colorado beetle is not *L. decemlineata* at all. The only example I have seen of *Leptinotarsa decemlineata* in America was found in July, 1887, at the side of the railway-track near Cambridge, Nebraska, where the pretty little butterfly, *Nathalis iole*, Bdv., also occurred. Possibly *Leptinotarsa* may be common in the low-lying eastern counties of Colorado, but can any one refer me to a well-authenticated record of its capture there? In my note (Entom. xx. 237), for Sangre de Cristo read Sangre de Cristo.—T. D. A. COCKERELL; West Cliff, Cluster Co., Colorado.

RELAXING INSECTS.—It frequently happens that insects which have been kept some time become so stiff that they require to be

left in the relaxing can for a few days before they are sufficiently relaxed to set; in the meantime many of them will most probably have contracted mould. Now I venture to give a practical suggestion to remove this difficulty. I damp the relaxing sand as usual and place the insects upon it, and then pour over them a few drops of benzine mixed with a little arsenic (which of course should have been previously prepared, and well shaken before use). I find that the benzine materially assists the process of relaxation, and the arsenic contained in it prevents the growth of that enemy, mould.—W. HARCOURT BATH; Birmingham, December, 1887. [A small quantity of naphthaline will be found more effective in the relaxing pot.—ED.]

FOSSIL LEPIDOPTERA.—Mr. Bell, in his interesting notes on "Post-glacial Insects" (Entom. 1), alludes to the absence of the remains of Lepidoptera in deposits of the Post-glacial period. That the Lepidoptera appeared ages before the period last mentioned is evident from the numerous specimens obtained from strata of Eocene and Miocene age; and their absence from Post-glacial deposits can only be explained, as Mr. Bell suggests, by the unfavourable nature of such formations for the preservation of soft-bodied animals. It would occupy too much space to enumerate all the known fossil Lepidoptera, and my remarks will, therefore, be confined to the Rhopalocera, of which less than a dozen have been described. From strata of Upper Eocene age, near Aix in Provence, five butterflies are known, viz., *Neorinopsis sepulta*, *Lethites reynesi*, *Coliates proserpina*, *Thaites ruminiana*, and *Pamphilites abdita*. The two first-named belong to the Nymphalidæ, the third and fourth to the Papilionidæ, and the fifth to the Hesperidæ. The remains of the plants on which the larvæ of these insects probably fed have also been found in the same beds. In addition to the species above named, M. Daudet has described the fossil larva of a species of Satyridæ from the neighbourhood of Aix. From the Lignites or Brown Coal of Rott, near Bonn, of Lower Miocene age, *Vanessa vetula* was obtained; and this is the only butterfly known from the Lower Miocene of Europe. The Lepidoptera from the marls of Radoboj in Croatia (Middle Miocene) include three butterflies, viz., *Eugonia atava*, belonging to the Nymphalidæ, and *Mylothrites pluto* and *Pontia freyeri*, belonging to the Papilionidæ. From America only one butterfly is known, viz., *Prodryas persephone*, which belongs to

the Nymphalidæ, and was found near Florissant in Colorado. This butterfly appears from its photograph, sent me by Mr. Scudder, to be in a more perfect condition than any of the specimens obtained from the European Tertiaries.—H. Goss; Surbiton Hill, Surrey, January, 1888.

LEPIDOPTERA FEEDING ON VINES.—May I trouble you with a query, the reply to which will be of interest to others besides myself? I have lately been enquiring as to what lepidopterous larvæ attack the vine, and am anxious to know as follows:—(1) Does *Batodes angustiorana* feed on the ripening fruit in summer, as reported to me from Kew, about which I think there must be some mistake? (2) What is the food-plant with us of *Tortrix vitisana*? I have no authentic account of its occurring upon the vine in England. (3) Figuier describes, in his 'Insect World,' an insect he calls the vine *Pyralis*. What species is it? or is it not really a *Pyralis*, but a *Tortrix*?—J. R. S. CLIFFORD; 4, Laurel Cottages, Gravesend, Nov. 6, 1887.

[(1) *Batodes angustiorana*, Haw., is abundant in Britain, not so on the Continent. Mr. W. P. Weston says, "The larva, which is polyphagous, is to be found in May and June, and is very partial to various fruit trees, privet, &c." (Entom. xiii. 112). It is especially common on a privet hedge bounding my orchard here. Stainton says, larva "on most trees." (2) I do not know this name. *T. vitana*, Fabr., is a synonym of *Ænectra pilleriana*. (3) The insect figured in Figuier's 'Insect World' (Engl. Trans., p. 276) is *Ænectra pilleriana*, Schiff. In Dr. Duncan's 'Transformations of Insects' (pp. 142-5) the same plate is reproduced, with the correct names given. At the meeting of the Entomological Society of France on June 8th, 1881, the late M. Maurice Girard spoke as follows:—"At the School of Horticulture of Versailles, formerly the king's kitchen garden, there is a collection of vine-stocks in pots, which are forced in the greenhouse. In the second fortnight of May numerous little larvæ and chrysalids are found on the flowers and young grapes, which have produced in the early days of June the *Cochylis ambiguella*, Hübn. (= *roserana*, Fröhl.),—the *Pyralis* or *Tortrix* of the grape. This Microlepidopteron, after the *Pyralis* of the vine, *Ænophthira pilleriana*, Denis and Schiffermüller, is the most fatal vine-moth. This species has probably been imported into the greenhouses of Versailles. I should be glad to assure myself if, as we can

foresee, this Micro will prove hurtful to the young grapes of the trellised vines, which are formed much later than those of the vines in house" (Bull. Soc. Ent. France, 1881, p. lxx.)—E. A. F.]

PROPOSED NEW ENTOMOLOGICAL SOCIETY.—I note with much pleasure a proposal to form a new Entomological Society, made in the January number of the 'Entomologist,' by Mr. Coryndon Matthews. There is great need of the help of such a Society in our country districts; and I think that if the Society was started on something of the lines proposed in Mr. Matthews' paper this would be removed. I would suggest, if possible, the holding, from time to time, an occasional meeting in conveniently situated districts. Subscribers should, I think, at all times have the fullest particulars of all matters transacted at meetings, either through, say, the 'Entomologist' or otherwise. The proposal that a Secretary should be appointed for each county is a good one, and would undoubtedly prove of great benefit in every way to the Society. I would suggest that general meetings should be held in country districts, and facilities should be given to each section to hold an occasional meeting among its own members, such meetings to be devoted to actual out-door collecting, working in some fresh district on each occasion, and that full particulars be given to the head Secretary of such meetings. I sincerely hope that the Society will be started without delay, and I feel sure that if once started it will be strongly supported, and will prove to be of the greatest benefit to entomologists residing in our country districts.—W. G. McMURTRIE; Radstock, Jan. 4, 1888.

PROPOSED NEW ENTOMOLOGICAL SOCIETY.—I have been asked to write something in support of the proposal to establish a new Society of Entomologists (Entom. 1). The London and Country is a good name, or, perhaps better, The London and Provincial may be suggested to Mr. Matthews, who wrote the article on the subject. While earnestly wishing to do all I can towards helping such a deserving project, I content myself by saying that several entomological friends here agree with me that Mr. Matthews is deserving of all help in the direction of his proposal, and of the best thanks from country entomologists. The matter is very well received here by everybody interested, and Mr. Matthews' treatment of it leaves little, if anything, to be added. I should think the question with entomologists is simply, Can such a Society be

formed? Its desirability is beyond all doubt. — J. ARKLE; 2, George Street, Chester, January 10, 1888.

ERRATUM.—For *hebridium* (page 27, *ante*) read *hebudium*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Fifty-fifth Anniversary Meeting, January 18, 1888.*—Dr. D. Sharp, President, in the chair. An abstract of the Treasurer's Accounts, showing a balance in the Society's favour, was read by Mr. H. T. Stainton, F.R.S., one of the Auditors; and Mr. H. Goss read the Report of the Council. It was announced that the following gentlemen had been elected as Officers and Council for 1888:—*President*, Dr. David Sharp, M.B., F.Z.S.; *Treasurer*, Mr. Edward Saunders, F.L.S.; *Secretaries*, Mr. H. Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; *Librarian*, Mr. Ferdinand Grut, F.L.S.; and as other Members of Council, Mr. H. J. Elwes, F.L.S., Sir John Lubbock, Bart., M.P., F.R.S., Mr. Robert M'Lachlan, F.R.S., Mr. P. Brooke Mason, M.R.C.S., F.L.S., Mr. E. B. Poulton, M.A., F.L.S., Mr. Osbert Salvin, M.A., F.R.S., Mr. Henry T. Stainton, F.R.S., and the Rt. Hon. Lord Walsingham, M.A., F.R.S. The President delivered an Address, for which a vote of thanks to him was moved by Mr. M'Lachlan, seconded by Mr. F. Pascoe, and carried. A vote of thanks to the Treasurer, Secretaries, and Librarian, was moved by Mr. Kirby, seconded by Mr. Waterhouse, and carried. Mr. Saunders, Mr. Goss, Canon Fowler, and Mr. Grut made some remarks in acknowledgment. Mr. Waterhouse proposed a vote of thanks to the Council, which was seconded by Mr. White, and carried. Mr. Stainton replied. —H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*December 22, 1887.* R. Adkin, Esq., President, in the chair. Messrs. H. Hayward, F. E. Pow, F. S. Pilkington, W. R. Hickling, H. I. Smith, C. Kedgley, F. Livesey, E. A. Fitch, G. T. Porritt, J. A. Smith, W. Turpin, S. Mosley, J. Butterfield, W. Farren, I. Eckersall, and the Rev. Canon Fowler, were elected members. The only exhibits were a lilac-coloured variety of *Lycena icarus*, an hermaphrodite specimen of *L. corydon* by

Mr. C. B. Smith, and a fine irradiated variety of the underside of *L. icarus* by Mr. A. C. Smith. This being the annual meeting, the Secretary read the report of the council, from which it appeared that during the year fifty-one members had been elected. The Treasurer read an abstract of the accounts, showing a balance to the Society's credit. The election of officers for 1888 was then taken, with the following results :—Mr. T. R. Billups, President; Mr. John T. Carrington, Vice-President; Mr. E. Step, Hon. Treasurer; Mr. D. J. Rice, Hon. Librarian; Mr. W. West (Greenwich), Hon. Curator; Mr. H. W. Barber, Hon. Secretary; Mr. H. J. Turner, Hon. Assistant Secretary. Messrs. R. Adkin, T. W. Hall, R. South, W. H. Tugwell, J. W. Tutt, J. R. Wellman, and J. Jenner Weir, Council.

January 12, 1888. T. R. Billups, President, in the chair. Messrs. F. W. Hawes, C. E. Runnacles, and A. E. D. Gould were elected members. Mr. J. Jenner Weir exhibited *Cicadetta hæmatodes*, and stated that Mr. C. Gulliver had taken a dozen during the past season in the New Forest; he (Mr. Weir) had no recollection of more than two or three having been taken in any one year before; out of the twelve taken there was only one male, and Mr. Weir contributed notes as to this. Mr. Tugwell showed specimens of *Dianthæcia cæsia* from Germany, and the dark variety from the Isle of Man; also continental examples of reputed and rare species of British Lepidoptera, among which was a specimen of *Lythria purpuraria*, which Mr. Tugwell stated was a species that had no right to be in the British list. Mr. Carrington said he knew of two undoubted English examples, both of which were taken in the neighbourhood of York, and one of them he saw alive; but although he, Mr. Prest, and many other entomologists had worked the same district for years, no other captures of the species had been made. Mr. Dobson exhibited *Agriopsis aprilina*, and a short discussion took place as to the reason of the colour in this species fading so quickly when compared with the colour of *Moma orion*, and *Geometra papilionaria*. Mr. Tutt contributed remarks on the reputed capture of *Acidalia strigaria* in Kent, and suggested that they might have been small specimens of *A. remutaria*. Mr. R. Adkin then read his Presidential Address for 1887, for which a vote of thanks was moved by Mr. Billups, seconded by Mr. T. W. Hall, and carried unanimously.—H. W. BARKER, *Hon. Sec.*

OBITUARY.

WILLIAM FARREN died at Cambridge, November 21st, 1887, aged 51 years. That he was not older will be remarked by many of our readers, for his was a name which had been before the entomological public, with an interval of some years, ever since about 1815. William Farren, like so many other field naturalists who have contributed valuable material for scientific research, appears to have developed a taste for Natural History when very young, for we hear of his having a small collection of moths when only 10 years of age, and by the time he was 14 he had decided to make his living by collecting insects and birds' eggs for sale, his station in life rendering necessary that he should decide his future livelihood. This naturally met with much opposition from his parents, who were unable to keep him; but a successful interview with a Cambridge undergraduate settled his future, when a sovereign was brought home in exchange for specimens. Thus he who might have been a mere labourer in the lower ranks of life, eventually contributed much to our present knowledge of the insect fauna of this country. In 1854 Mr. Farren went to Shoreham, Kent, to collect insects, and there found the rare and elegant *Hypercallia citrinalis (christiarnana)*, taking two specimens. In 1858 he went to the New Forest by subscription, finding many local species which were then less commonly taken than in later years. In the same season he worked in the Isle of Wight, and took *Luperina dumerilii* (Entom. xviii. 73, 74). For some years this kind of life was his, and many odd records of his captures will be found in the current Natural History literature of the time. In 1862 he married, and again visited Hampshire, but chiefly for Coleoptera on that occasion. The following year he commenced business as a photographer, confining his studies to the Micro-Lepidoptera, and in 1869 for a time ceased collecting Natural History objects. In 1874 his business premises were destroyed by fire, which unsettled him for some years; until 1879, when he commenced business as a professional rose-grower, and continued until 1883, when he again changed his occupation, and entered upon the business of a print and picture dealer, now carried on by his son. Shortly after, in 1884, finding his son had developed a taste for entomology, he recommenced his study of insects and gave

in these pages (vol. xix. 46) his views of the changes which had taken place amongst entomologists since he left off the study, under the title of 'An Entomological Rip van Winkle.' William Farren was known especially as a field naturalist. Though his published notes and records are scattered over many years, he never contributed any long treatise upon either branch of the subject. He was an acute observer, and always ready to assist those who worked with him; and his power for work may be understood when we hear of his collecting and exchanging upwards of 1700 species of Lepidoptera alone during the last three years of his life.—J. T. C.

JAMES ENGLISH, of Epping, died on January 12th, 1888, at the age of 67 years, after an illness of six months, said to have been largely brought about through excessive work on the collection of biological subjects, an occupation he had followed for upwards of fifty years. English's father had been a soldier, and settled in Epping as a gardener, his son receiving the most elementary education. After leaving school he was employed at the late Henry Doubleday's shop in Epping, and there soon contracted a taste for the pursuits of his master. It is chiefly in this connection that he will be remembered by the readers of this magazine, for the association continued so long as Mr. Doubleday was able to work at his favourite study; English being employed as his collector whenever opportunity occurred. He went for his master to the "Fen" country, and was one of the last to take the two Lepidoptera for which the district was noted, viz., *Polyommatus dispar* and *Noctua subrosea*, both now lost to these Isles. In the latter years of his life he devoted much attention to cryptogamic botany, and discovered a system of preserving fungi. He seldom contributed anything to entomological literature, but has left two small books behind upon the preservation of fungi and plants. James English was more a collector than a student.—J. T. C.

JAMES HAMER.—We regret to announce the death of this hard-working entomologist. Mr. Hamer died on the 14th of November, 1887, aged 46 years, and was interred at Southport, Lancashire. He was well known in the North of England, but rather as a practical collector than as a writer.—J. T. C.

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ARCTIA CALA.



ABERRATION OF *ARCTIA CALA.*

The above woodcut represents a very beautiful aberration of *Arctia cala* kindly lent for figuring by Mr. Charles A. Briggs, of Surrey House, Leatherhead. It is a female, which was bred among others of the ordinary typical form some years ago, by the late C. H. Longley, of London, but we understand there is no record of locality in which the larva was found.

The anterior wings are very pale cream-colour, with the usual brown markings slightly indicated by the merest shading of darker cream-colour, too delicate to reproduce in a woodcut, excepting those represented in the centre of the wings, which are of a rich blackish brown. Fringes are of a light brownish colour.

The posterior wings are orange-scarlet, with the usual dark blue spots replaced by very faint orange-coloured markings.

The body is orange and scarlet, without the usual dark bands.

The under side of all the wings is dark cream-colour, shaded with pinkish orange. On each anterior wing there are three small dull black spots on the under side.

COLEOPTERA TAKEN IN 1887.

BY ALFRED BEAUMONT, F.E.S.

As a beetle collector I have often been annoyed by not knowing where to find the beetles I wished to have. The book on Coleoptera by the Rev. Canon Fowler, now publishing by Reeve and Co., has supplied in a great measure my wants. The descriptions of species are admirable, the localities all I could wish. I usually get my holiday in September and spend it in Scotland; the reference so often made in Mr. Fowler's book to Askham Bog, near York, tempted me to break my journey at York on my way home. Thanks to the Rev. H. C. Hey, of that city, who most kindly directed me to the best part of the Bog for collecting, I had considerable success. Perhaps a list of water-beetles taken by me during 1887, near York, in Scotland, Kent, and a few other localities, would be acceptable to coleopterists reading the 'Entomologist.'

Cnemidotus impressus, Erith.

Haliplus obliquus, Lee, Catford; *confinis*, Lee; *fulvus*, Lee; *flavicollis*, Lee; *cinereus*, Lee, Lewisham; *fluvialis*, Lee, Greenwich; *ruficollis*, in all ponds; *lineaticollis*, common everywhere.

Brychius elevatus, Catford.

Hyphydrus ovatus, common everywhere in the south.

Cælamбус inæqualis, York, Lewisham; *versicolor*, York; *quinquilineatus*, York; *impersopunctatus*, Catford; *parallelogrammus*, Gravesend, brackish water; *novemlineatus*, Gartmorne Dam, a large reservoir that supplies the town of Alloa; *confluens*, Elmer's End; *decoratus*, Lee, York.

Deronectes assimilis, Dollar, York; *depressus*, Lewisham; *12-pustulatus*, Catford.

Hydroporus davisi, in a muddy river where all the refuse from several paper-mills is turned, at Colinton, Midlothian; *rivalis*, Dollar; *lepidus*, York; *lineatus*, Lee; *granularis*, York; *pictus*, York; *melanarius*, stagnant pools on heathery moor, Culross; *memnonius* Lewisham, York; *nigrita*, most moorland pools in Scotland; *obscurus*, Lee, York, Dollar; *discretus*, grassy streams, Pentlands; *pubescens*, common everywhere; *lituratus*, Lee, York, Culross; *planus*, common everywhere; *morio*, moors, Culross; *gyllenhalli*, West Wickham, Lee; *tristis*,

Culross, York; *scalesianus* (too late for this species), Askham Bog in early spring; *angustatus*, Dorking, Lee; *umbrosus*, moors, Culross; *vittula*, Elmers End, Dollar; *incognitus*, Gartmorne Dam, Alloa; *palustris*, everywhere common; *erythrocephalus*, everywhere common; *rufifrons*, Dollar; *dorsalis*, Lewisham, York; *longulus*, Pentlands; *obsoletus*, Pentlands; *ferrugineus*, Newhaven; *oblongus*, Askham Bay (too late for it in September).

Agabus uliginosus, Askham Bog, thanks to Rev. H. C. Hay; *affinis*, Dollar; *unguicularis*, York, Gartmorne Dam; *conspersus*, Gravesend, brackish water; *femoralis*, moors, Culross; *abbreviatus*, under stones in a dried-up pool, York; *arcticus*, deep fresh-water pool in quarry, Culross; *Rhantus grapii*, Askham Bog; *Hydaticus seminiger*, in considerable numbers, Lee, in August.

It may be interesting to record *Elmis volkmeeri* at Catford.

30, Ladywell Park, Lewisham.

AN ENTOMOLOGICAL WINTER CAMPAIGN IN SPAIN AND NORTH AFRICA.

By G. DIECK.

(Concluded from p. 43.)

AFTER some fifteen days stay, full of the highest enjoyment, I left African ground, and on 23rd January again landed on the Spanish coast of Algeciras, where I obtained an excellent lodging in the vicinity of the Fonda Italiana. I can, with a good conscience, assert that the beetle-fauna of Algeciras is the richest I have met anywhere in Europe, for here are found not only the greater number of species which occur at Tangier, but one also meets here with a crowd of insects, &c., truly peculiar to Spain, which are wanting on the African coast. Herein lies the reason, in my opinion,—that the sea, even at this present time, brings about a certain limited union of both faunæ, for it carries over insects which have been brought down by the African rivers and deposits them in the Bay of Gibraltar. The current from the Atlantic Ocean to the Mediterranean Sea is an extraordinary strong one, and principally by storms from the south this is forced

in direct to the Bay of Gibraltar, and so naturally here is a quantity of *Genista* refuse deposited, which the sea for the most part has carried from the north-west coast of Africa. At all events the great resemblance of the sand-hill fauna of Tangier to that of the Bay of Gibraltar is very remarkable; *Isocerus ferrugineus*, *Pachychile salzmanni*, *Helops pallidus*, the small form of *Pimelia fornicata* is common to both; while *Tentyria sinuatocollis* of Algeciras, in some varieties, comes very near to the *maroccana* of Tangier. Likewise in both places are found *Apion cretaceum*, *Litarus coloratus*, *Cnecorhinus ludificator*, on the same sand-hill plant, *Genista monosperma*; and I also discovered in marine *Genista* flood refuse at Algeciras, *Pæcilus numidicus*, which had been hitherto only known from Morocco, also *Ditomus cephalotes*, not rare at Tangier, and a dead fragment of a *Scarites costulatus*, Fairm., which I have only met with on the dunes of Tangier.

My opportunity for collecting at Algeciras occurred at the most favourable time of year for the South of Spain, the beginning of spring; so that, on the one hand, I had come early enough to find all the representatives of the winter fauna; and on the other, day by day to discover newly emerged species, which contributed not a little in making my collection numerically rich in number of species. It so happened that in this year the warm spring weather set in unusually sudden and early, so that many an insect was enticed out earlier than it would have been in other seasons.

The greater number of my excursions were made to a narrow valley, overgrown with old cork trees, and which runs far up in a westerly direction from the town into the so-called Sierra of Algeciras. The road thither follows at first a little stream flowing through Algeciras, whose beautiful overgrown banks invite the use of the Streifnetz (sweeping net?). The result was, indeed, a good beginning, for there were found, upon the different shore plants principally, *Chrysomela lucida* and *C. palustris*, in all varieties, *Cionus blattariæ* and *C. angulatus*, *Donacia polita*, *Dibolia occultans*, *Phyllotreta variipennis*, *P. procera*, *Thyamis parvula*, *T. lateri-punctata*, *Batophila ærata*, *Apion squamigerum*, *ononis*, *humile*, *laricolle*, *flavofemoratum*, *Mecinus circulatus*, and lastly two specimens of the rare *Chrysomela tagana*, Suffr. Under stones alongside the stream there was but little, and only once did I find under a heap of stones some 80 *Pheropsophus hispanicus*.

Among other species I found *Chlœnius velutinus*, *C. agrorum*, *C. vestitus*, and some specimens of *Nebria andalusica*, Rambur. After half an hour's journey the brook is crossed and a wide valley is reached, which is bounded alternately by small woods of cork trees and stony banks. Under the stones lying plentifully around were found abundantly *Percus politus* var. *vandalitiæ*, Reiche, *Siagona dejeani* and *S. jenissoni*, *Aptinus displosor*, *Brachinus angustatus*, *B. sclopeta*, *Licinus silphoides* var., *Pœcilus quadricollis*, *crenatus*, *infuscatus*, *Steropus globosus*, *Apotomus rufus*, *Cossyphus hoffmannseggii*, *dejeani*, *incostatus*, and *pygmæus*, *Calcar elongatum*; more rarely *Amblystomus mauritanicus*, *Scarites hespericus*, *Harpalus punctatostratus*, *H. siculus*, *Carabus bæticus*, *C. melancholicus*, *Brachinus testaceus*, *Blechnus glabratus*, *Charop-terus punctatellus*, *C. foveolatus*, *Aristus clypeatus*, *Otiorynchus affaber*, *Ctenistes aubei* and *ghilianii*, *Tychus miles*, n. sp., *Scyd-mænus kraazi*, Sauley, n. sp., *S. intrusus*, *S. helferi*, several *Ptini*, *Rhytiphinus dilatatus*, *Pœderus cephalotes*, several *Achenii*, *Sunii*, and other *Staphylinidæ*. Singly appeared *Acinopus giganteus*, *Carabus dufouri*, *Bradycellus lusitanicus*, *Platytarus mauri-tanicus*, *P. gracilis*, *Aristus capito*, *Dyschirius fulvipes*, *Tachys algericus*, *Ætichirus pœderinus*, *Procirrus*, *Mecognathus*, n. g., *Scyd-mænus alcides*, Sauley, n. sp., *Bythinus peninsularis*, Sauley, n. sp., *Colon murinus*, *Acalles punctaticollis*, *A. tuberculatus*, and others, *Arthrolips humilis*, *Moronillus discolor*, *Hypera fallax*, *H. austera*, and *Sitones hispanicus*, all n. sp.

If one penetrates into the cork woods quite different species occur. Under loosened bark are to be found *Brachyderes pubes-cens* in very numerous examples, and with it, singly, *Helops coria-ceus*, *Cardiophorus bipunctatus*, *C. ulcerosus*, *Stylosomus ilicicola*, *Lebia rufipes*, and the rare *Singilis bicolor*; while from off the broom bushes may be beaten *Gonioctena litura* and *G. ægrota*, as well as a new *Strophosomus*. In the damp places numbers of *Mastigus palpalis* are running about. Further along the valley turns to the south-west, and one reaches a very old aqueduct, dating back, probably, to the time of the Romans: this spans the valley in its entire breadth. Around this aqueduct the ground is marshy, and there occurs a genuine marsh beetle, *Carabus melan-cholicus*, plentifully; while under stones *Chlœnius virens*, *Ditomus gracilis*, *Aristus sphærocephalus*, *Litoborus planicollis*, *Heliopathes ibericus*; more rarely *Melyris granulata*, *Ophonus hispanus*,

Acinopus megacephalus, *Alexia pilosa*, and several others are found. Here I captured single specimens of *Pristonychus mauritanicus*, also new to Europe, *Pseudotrechus mutilatus*, Ros., a new *Acalles*, and a very small specimen of *Platyderus gregarius*; and also among a colony of *Atta capitata*, 10 *Merophysia carinulata*, 60 *Cholorocera formiceticola*, 250 *Oochrotus unicolor*, and in another of (*Ecophthora pallidula*, 2 *Scydmaenus hospes*, Sauley, n. sp.

Beyond the aqueduct opened out the before-mentioned thickly wooded mountain valley, towards which I turned my steps with great preference and very frequently. As well as the ancient cork trees, there was here a rich vegetation of several species of broom, *Erica arborea*, and similar copsewood plants; while the thick carpet of moss and leaves which covered the ground of the thicket invited the use of the sieve. On beating the bushes, especially the *Ericas* in blossom, standing as high as a man, were found in great numbers *Attalus ulicis*; somewhat rarer in collections, and less widely spread, *Cryptocephalus lineellus*, Suffr., *Strophosomus sagitta*, Seidl., n. sp., and a second new species of this genus; also some *Meligethes*, *Colaspidea nitida*, a *Philorinum*, and single *Sospita tigrina*, L. More productive still were the siftings of fallen leaves. There were found a new *Catops*, *Styphlus unguicularis* in surprising varieties, *Trichonyx brevipennis*, Sauley, n. sp., *Bythinus ibericus*, Sauley, n. sp., more rarely *Bythinus peninsularis*, n. sp., *Scydmaenus helferi* var., and single specimens of the beautiful *Pselaphus algesiranus*, Sauley, n. sp., *Faronus hispanus*, Sauley, n. sp., and *Trechus dieckei*, Putzeys, n. sp., recognised by four yellow spots. Under stones were found separately a still doubtful *Haptoderus*, *Orthomus hispanicus*, and *O. rectangulus*, Fairm. (new to Europe), *Platyderus vuillefroyi*, m. n. sp., a very beautiful variety of *P. dilatatus*, and especially *P. ruficollis* (var. *algesiranus*, m.), *Amara fervida*, Coq., *Asida luctuosa*, Ros., and *Cathormiocerus curvipes*, Woll.

With the exception of *Helops coriaceus*, *Adelocera carbonaria*, and some *Cardiophori*, there was little to be found on the old corks; but under some dead ones I found a yet living specimen of *Calosoma sycophanta*, which was not then known from Andalusia; and in a tree-stump inhabited by wasps, an exceptionally large and dull specimen of *Amorphocephalus coronatus*, which, perhaps, with more material for comparison, would have been placed as specifically different; but unfortunately I could

get nothing further from this locality, for in the attempt to break away more bark the enraged wasps attacked me, and stung my face and hands so mercilessly that I was thankful to be able to hurry away and escape from these companions.

On the way back the old aqueduct is sometimes used, but I usually turned into a valley opening to the south-east, in which, under stones easily raised, occurred in tolerable plenty *Singilis soror*, still very rare in collections, and in company with it *Lithophilus cordatus*, the beautiful *Helops macellus*, Krantz, n. sp. *Colan murinus*, and other rarities. Here also sometimes were bundles of straw laid out to dry, which I carefully shook in the umbrella, and thereby secured a large number of good and sometimes new beetles, principally Curculionidæ; among others, *Cænopsis waltonii*, *Cathormiocerus*, n. sp., *Trachyphlæus*, n. sp., numerous *Apions*, *Misolampus gibbulus*, *Helops ophonoides*, Luc., Lathridiidæ, Cryptophagi, and several others.

On leaving the valley the road leading from Tarifa to Algeiras is reached. This may now be followed, for the fields which it intersects are also very productive localities. Thus I found here under stones the two *Siagoni* in incredible numbers, *Chlenius chrysocephalus*, *Brachinus angustatus*, Dej. (*andalusicus*, Ramb.) in hundreds; also, somewhat more sparingly, *Brachinus bæticus*, *B. testaceus*, and *B. glabratus*, Dej.; singly, *Pæcilus bæticus*, *P. decipiens*, *P. cupripennis*, *P. crenulatus*, and many other species already mentioned as occurring under stones. My expeditions were next for the most part directed to the sandy coast district lying to the north of the town, which has produced some excellent localities. The way thither at first follows the road leading to San Roque, and then bends to the right to the pine woods known in Algeiras as "los Pinales," a classical entomological ground, through [the interesting captures of Will, of whose collecting an old Algesiran brave had so much to tell me. The first good localities on this road are the outside walls of a churchyard, only a few minutes from the town. From these one may take the pretty *Lithonoma andalusica*, 50 or 100, while by pulling out the plants growing on the walls several good Heteromera and Carabidæ were discovered. The luxuriantly overgrown sides of the road were also highly productive. Under the broad leaves, lying on the ground, on different kinds of plants, were hidden *Ceutorhynchus andreæ* v. *peregrinus*, *Cneo-*

rhinus, n. sp., *Cathormiocerus*, n. sp. (?), *Phytonomus pardalus*, *P. deyrollei*, Lap., and above all a very interesting new genus of the group *Otiorhynchus*. Upon the road, in the asses' dung, lived *Onitis ion*, *O. olivieri*, *Aphodius lugens*, and *A. luridus*; while under stones lying near, *Æcophthora pallidula*, *Merophysia carinulata*, and *Paussus favieri*, with *Aphenogaster senilis*, *Dinarda nigrita*, *Sunius latus*, and *Adelostoma sulcatum*, were to be met with, the last only occasionally, and in company with the ants. Not far from a small inn a footpath turns to the right, which leads over wide cattle pastures to the pine woods before mentioned. On this path one remarks some water-pools, which invite to the search for water-beetles. Here are found innumerable *Parnus hydrobates*, Kies., *Berosus hispanicus*, *B. æriceps*, *Laccophilus testaceus*, *Hydroporus xanthopus*, *H. geminus*; more rarely *Oethebius punctatus*, several *Hydrænæ*, *Hydrochus angustatus*, *Hydroporus meridionalis*, *H. bicarinatus*, *Agabus didymus*, *A. chalconotus*, *Hydrophilus pistaceus*, &c. The cattle pastures were enlivened by an interesting series of dung beetles, for instance, *Geotrupes momus*, *G. hypocrita*, *Bubas bison*, *Copris hispanus*, *Aphodius scybalarius*, *A. lineolatus*, and *Onthophagus furcatus*; more sparingly were found *Geotrupes hoffmanseggi*, *Bubas bubalus*, *Onthophagus hirtus*, *O. marginalis*, *O. punctatus*, *O. melitæus*, *Aphodius tersus*, and *A. perezi*, Harold, n. sp., *Tachinus pictus*, and finally a pair of our native *Geotrupes typhæus*.

After a short walk the wood is reached, and with it the sand-hills, the fauna of which naturally differs, like their surroundings. Here, even at the end of January, were flying *Cicindela maroccana* in all varieties, including the lovely golden *farellensis*, and with it more rarely *Cicindela flexuosa*, which made its appearance at the beginning of February. On the dry sand were lying two *Timarchæ*, *Pimelia maura*, and *P. fornicata* var., some *Erodii*, and single specimens of the rare *Dermestes thoracicus*, *Sitones virgatus*, and *S. niger*, All. (the last new to Europe), and *Adimonia Haagi*; while even at the end of January, but in the later hours of the afternoon, *Melolontha papposa*, in great numbers, was to be seen. The sweeping-net also produced many good things, as *Coccinella lyncea*, Ol., some specimens of the new *Xenostrogylus truncatus*, Kiesw., *Crepidodera ventralis*, *Orestia andalusica*, All., *Hydnobius andalusicus*, m., n. sp.; while in fungi were to be seen numerous *Boletobii* and

Lycoperdina boristæ, in very dark varieties; and under the cactus stumps lying round, *Eumicrus promptus* and *E. maroccanus*, Sauley, new insects to Europe, and a single new *Elytrodon*, appeared as captures unusually deserving of mention.

On the shore the greater part of the Gibraltar sand-beetles already quoted were still to seen, and in addition to them also *Pachychile bifida*, *Tentyria sinuatocollis*, *T. emarginata*, one *Penthicus thoracicus*, *Opatrum lugens*, and to me a very doubtful *Sclerum*, which perhaps has been imported here from Africa by the sea.

The extraordinary richness of the fauna on the one hand, and the amiable behaviour of the people of Algeciras on the other, who received me with great hospitality into their families, and thus afforded me the opportunity of sharing the harmless amusement of the Spanish carnival and its joyous masquerades to the greatest extent, made Algeciras so valuable to me that I could only decide with heartfelt regret to separate myself from this hospitable place; and when, on the 20th February, the boat came which was to convey me to Cadiz, I could only say farewell with a very heavy heart.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

(Continued from p. 52.)

Acronycta, Och., *ligustri*, F.

Var. *coronula*, Haw. — This variety has the typical pale whitish markings near the apex of the anterior wings of a pale greyish brown colour, the white colour being reduced to a lunule on the inner part of the mark. I have received this form from South Wales, and have frequently captured it with the type at Strood, Cuxton, and other places in North Kent.

Var. *olivacea*, Dobrée, litt. — Like var. *coronula*, this has no white markings, the white portions being suffused. The suffusion, however, is in this form of a dark olive-green colour. In some places this form is equally common with the type, often more so, as is the case in Yorkshire. In Entom. x. p. 124, the late Mr. Prest writes :—"The form of *A. ligustri*, we (in the

neighbourhood of York) find, is suffused with dark olive-green ; we rarely see the white-crested form. I took thirteen of this species at sugar one season, some years ago, and of these ten were olive-green with no white markings." Mr. Dobrée says that "In the East Riding of Yorkshire *A. ligustri* is not a common insect, but a variety in which the white is totally wanting and replaced by olive-green is equally common with the type." Herr A. Hoffman (Hanover) writes me :—"I have got *ligustri* from Vienna of a greenish-brown colour, with no white markings,—the place where the white markings ought to be are only a little lighter than the other part of the anterior wings." The occurrence of this variety, in such widely different localities as Yorkshire and Vienna, is very interesting.

Acronycta, Och., *rumicis*, L.

[Before dealing with the varieties of *A. rumicis*, it is necessary to enter at some length on the consideration of associating the var. *salicis* of Curtis with this species or with *A. menyanthidis*. I have gone carefully through all the literature which I can find on the subject, the following being the summary:—

Mr. Stainton, in the 'Manual,' vol. i. p. 183, treats it as a distinct species, and says that it closely resembles *rumicis*, but is smaller and darker.

Newman figures it as a variety of *rumicis*, 'British Moths,' p. 255.

Dr. Staudinger quotes it as an aberration of *menyanthidis*, with the following synonymy and description: "ab. *salicis*, Curt., Gn.? *euphorbiæ*, Wood. obscurior, alæ anteriores fere unicoloribus ; locality Anglia."

In Humphrey & Westwood, 'British Moths,' p. 197, we find :—"Varieties of *menyanthidis* occur in which the ordinary strigæ are much more distinct and brown, forming broad patches on the wing, the inner margin at the base of the third striga being marked with a more distinct lunular patch. Such a variety constitutes the *A. salicis* of Curtis."

Mr. South, in his synonymic list, calls *salicis*, Curt., a synonym of *rumicis*, and then directly after (on the same page) calls it a variety of *menyanthidis*.

At p. 7 of the 'Substitute' (1856-57) the late Mr. Nicholas Cooke wrote :—"At p. 183 of the 'Manual' I see Mr. Stainton

has copied an error from Guenée's great work, which the latter author was led into by Curtis. The larva figured along with the imago of *salicis* in the splendid work of Curtis is the larva of *menyanthidis*. I have had hundreds of them, but never reared *salicis* from them. Both myself and my friend Mr. Greening have, however, reared *salicis* from the larva of *rumicis*, and are perfectly satisfied that it is nothing more than a dark variety of the latter species." At p. 212, however, Mr. Cooke modified this statement very considerably. He says:—"The statement ('The Substitute,' p. 7) brought me a reply from Mr. J. C. Dale, which induced me to send him my specimens for examination, and it turns out that the *salicis* of our northern collections is not the *salicis* of Curtis. . . . Mr. Dale says with good reason that, if *salicis* is a variety at all, it is a variety of *menyanthidis*; that he was with Curtis at the time he found the larvæ from which they were bred; that he also found three larvæ, and reared one moth exactly like Curtis's figure of *salicis*. Curtis was more fortunate, and bred several, and one *menyanthidis* among them, which puzzled him. The larvæ were found on salallows in the Trosachs, . . . proving Guenée to be right in stating that the figure given by Curtis of the larva by the side of the imago is sufficient evidence that this *salicis* is only a variety of *menyanthidis*."

Herr A. Hoffman writes me:—" *Rumicis* does not vary with us (Germany). *Menyanthidis* varies greatly in colour, from a greyish white to dark melanic forms which occur on the moors or at the sea-coast of North Germany (probably your *salicis*, Curt.)."

After reading the above extracts I think most lepidopterists will agree with me in stating that there seems little doubt that there are two varieties named *salicis*, one, *menyanthidis* var. *salicis*, Curtis, the other, *rumicis* var. *salicis*, Sta. and Newman. In this paper I shall therefore treat them separately under their respective species.]

A. rumicis, L., *a.* var. *salicis*, Sta.—Described in Stainton's 'Manual,' vol. i. p. 183, as a distinct species. It is undoubtedly a melanic form of *rumicis*. The anterior wings very much suffused with black scales; the orbicular is distinct, but the reniform generally inconspicuous; there is a pale lunular mark at the base of the third striga, and a row of white dots parallel

to the hind margin. It is figured in Newman's 'British Moths,' p. 255, fig. 2, and occurs in the North of England and Scotland. My own specimens came from Mr. Finlay, Meldon Park, Morpeth, Mr. Henderson of Glasgow, Perth, &c. At Entom. x. p. 129, we read, "*A. rumicis* also occurs nearly black at times with us," *i. e.*, in the E. Riding of Yorkshire. It is not uncommon near Beverley (E. Yorks).

β. var. euphorbiæ, St. (non Hb.).—Under this name our early British lepidopterists figured and described a var. of *rumicis*, which they erroneously referred to Hübner's *euphorbiæ*, which is a very different species. There is a figure in Humphrey and Westwood's 'British Moths,' pl. xlii. fig 13, and a description, vol. i. p. 197. The figure does not agree with the description very well. The figure depicts a form which has the space between the stigmata pale, and suffused more than is usual with dark brown blotches. I have seen nothing answering to the figure, but the description represents a form fairly abundant in the S.E. district.

γ. var. euphrasiæ, St. (non Dup.).—A pale var. of *rumicis* is referred by Mr. Stephens to the Continental *euphrasiæ* of Treitschke and Duponchel. It is very different to that species, but is a well-marked and uncommon variety of *rumicis*. The ground colour of a pale yellowish grey, with many black transverse lines but no dark patches; the anterior stigma obsolete. A pale lunule is developed at the end of the elbowed line, and the last striga is pale, wavy and continuous. I have some fine specimens of this unusual, pale form, which appear to agree exactly with the description of Stephens' specimen, except that they have the anterior stigma indistinct, not obsolete. My specimens were taken in Cornwall, by Mr. F. Norgate, of Brandon.

It would seem that in Britain our specimens of *rumicis* from the South-west are very pale; much suffused with brown in the South, South-east, and the Midlands: and much suffused with black in the North of England and Scotland.

Acronycta, Och., *auricoma*, F.

α. var. similis, Haw.—In this variety the wings are more ashy in colour, with a slightly waved line before the middle of the anterior wings; another short oblique line is in the centre of the wing, and a third pale one at the apex.

β. var. menyanthidis, Haw. (non Hb.).—This variety of *auri-*

coma must not be confounded with the northern species of the same name. The great character of this variety is the increased development of the ψ -like mark. I have taken this form with the type at Addlestone, in Surrey, and have no doubt it occurs everywhere where the type may be obtained.

γ . var. *pepli*, Hb., Gn.—Dr. Staudinger gives this as a probable variety of *auricoma*, with the description, “obscurior, magis unicolor.” Guenée describes it without a mark of doubt, as follows:—“The ground colour of a more bluish grey, and at the same time more sprinkled with black dots, which make the marking less distinct. The inferior wings of the male are whitish in the middle. Fringe spotted.” He gives as localities, Germany and Normandy.

Acronycta, Och., *menyanthidis*, Vw.

α . var. *salicis*, Curtis.—This melanic form of *menyanthidis* was figured by Curtis (Brit. Ent. pl. 136), with the ordinary larva of that species, the imago from which the figure was obtained having been bred with others by Curtis, from *menyanthidis* larvæ captured on willow in the Trosachs. The late Mr. J. C. Dale, who was with Curtis at the time, and also took larvæ, bred a specimen, *vide* ‘Substitute,’ p. 212. This melanic form must be very rare in Britain. The unfortunate error of dark *rumicis* having been mistaken for Curtis’s *salicis*, has made the matter much involved. It is to be hoped that all collectors who breed melanic *menyanthidis* will record them. Mr. Prest, Entom. x. p. 129, writes:—“Those (*menyanthidis*) we take near York are nearly black, and the light form is very rare.”

β . var. *obsoleta*, mihi. — The ground colour of the anterior wings somewhat paler than in the type, the markings very faint and indistinct. Instead of the black markings of the type (*vide* Newman’s ‘British Moths,’ p. 257), they are grey and but little deeper in shade than the ground colour. The discoidal spots are indistinct, the hind marginal and central areas very pale, the latter inclining to white. My specimens of this form were given me by my friend Mr. Butterfield, and were captured in the Bradford district. He also gave me a remarkable specimen with the right side of this obsolete form and the left side much more strongly marked and typical.

γ . var. *suffusa*, mihi.—The anterior wings powdered with black

scales, giving the insect a much darker appearance than the type. The variety figured in Newman's 'British Moths,' p. 257, fig. 4, appears identical with my specimen of this form, which also came from the Bradford district.

♂. var. *scotica*, mihi.—Larger and brighter than the type, the markings very clear and distinct. All my Scotch specimens from the Glasgow and Dumbarton district are much larger, brighter, and more distinctly marked than Yorkshire specimens. The specimens from the east coast of Scotland are more like English, than Scotch specimens from the west coast, or from the Rannoch and surrounding districts. It may be well to remark here, that the fauna of the east coast, appears to be less alpine than that of the west coast of Scotland in a more southern latitude.

I may add that a great deal of variation occurs in the size, colour and completeness of the discoidal spots in the specimens of this species; very few specimens appear to be identical in these respects.

Acronycta, Och., *euphorbiæ*, Fb.

Var. *myricæ*. Gn.—The type of this species (*euphorbiæ*) does not occur in Britain. The Continental specimens are very much paler and generally somewhat smaller than our specimens. *Myricæ* was long considered a distinct species, and was described as such by Guenée, but there is no doubt that it is only one of those highly specialised melanic forms, for which the northern part of Britain and the western coast of Ireland are so remarkable. It is useless to redescribe a species which is in all our collections and has been so often described. Guenée describes a variety of *euphorbiæ*, under the name of *montivaga*, as follows:—

“The anterior wings of a deep slaty grey, with a slight tinge of bluish white, the markings almost absorbed in the ground colour; thorax grey. The inferior wings of the male a little powdered with black on the outer edge, the nervures and a distinct cellular lunule darker; those of the female of a darker grey with the fringe white. The anterior wings of the female not differing from those of the male. The variety is constant; perhaps it is due to the influence of the mountains. Locality, Chamouni.” (Guenée, 'Histoire naturelle des Insectes,' vol. v., pp. 57, 58).

There is no doubt that these varieties (*myricæ* and *montivaga*) are identical. The specimens of *montivaga* I have received from

the Alps appear almost intermediate between my pale *euphorbiæ* and Rannoch *myricæ*. It seems strange that Guenée should have described exactly the same variety; first as a var. of *euphorbiæ*, and secondly as a distinct species. Herr Hoffmann writes me that the markings of *montiraga* from the Engadine are a little less distinct than those of *myricæ* from Rannoch, otherwise the forms are identical.

It may be advisable, before leaving the genus *Acronycta*, to mention a statement of Guenée's ('Histoire des Insectes,' vol. v., p. 47), which I have had no means of verifying from actual observation. He says, "almost all the species of this genus have now and again isolated individuals distinctly suffused with rose colour." Perhaps some of our lepidopterists have such. If so I trust they will record them.

(To be continued.)

THE ELUCIDATION OF CAUSES OF VARIATION.

BY SYDNEY WEBB.

FROM time to time, in the pages of our entomological magazines, various theoretical causes have been adduced by correspondents, with the hope of explaining unknown recurring phenomena amongst lepidopterous insects, popularly known as varieties; but which, as they chiefly affect individual specimens rather than whole broods, should perhaps better have been termed (as indeed they are by a minority) aberrations.

It is I think pretty generally admitted that some, if not all, of the suggested disposing causes are prime agents, but there the matter rests. No one attempts to carry the investigation further, yet no one is satisfied with the explanations given. This unanimity of dissatisfaction arises from two sources. One is that an undoubted change does take place, not only in botanical but entomological, and in far higher orders of animal life, when kept and systematically reared in confinement, which is not observable in the wild condition. The other is that where in a state of nature these changes have been noticed (apart from single instances) they have been partial rather than general, often in a limited area of a few square miles.

How are we to get possession of facts which will assist us in unravelling the tangled skein of hypotheses presented to us? Hitherto two public methods only have been tried. I think them both inadequate.

(A.) Simple records of specimens are absolutely worthless to the majority of readers, though the fortunate captor or owner may think otherwise; and even when by an artist's aid a wider circle is reached, science is not advanced in any way.

(B.) Of equally little service are the local lists of captures by non-residents; chronicles of one season, or may be a holiday visit, though perhaps they occasionally contain a geographical record of note, which scientifically places the records on a somewhat higher pedestal. There are comparatively few localities in Britain that have not been more or less worked, albeit in a desultory manner, and the only use of these lists that I can see is the possibility of their being perpetuated in print in some local guide or handbook.

Will collectors, observers, and even editors, make a fresh departure with the coming season, from these stereotyped records?

A simple meteorological note-book of the locality each observer lives in, can easily be kept with the annual diary; so that any list we may wish to send to a magazine may combine the two. And if we do go away collecting to a distance in the summer, pray let us remember that a note on the soil and subsoil is of more value than telling that we were caught in a thunderstorm or had to obtain refreshment at a wayside inn. If we notice the "blues" to be more violet in their hue than in our own neighbourhood, we may consistently mention it without any speculations as to causes, for they may not show the same hue another year, or any other difference which strikes us concerning our fluttering friends. Then the Editor will, I am sure, be glad of our communications, and he will probably know to whom in that locality to apply for the previous winter or season's weather-table, which, coming as a postscript to our notice, will be one link in the chain of worthy records, which possibly in the future will assist in the elucidation of the unsolved problem.

An objection may perhaps be raised against the length of the notes thus treated, that is, if both be published together, but

they will be notes of usefulness, much more so indeed than continuous theoretical controversies on the subject, which I can scarcely think will be cleared up by the pen or observations of any one individual.

Single aberrations are of course more difficult to deal with, but even with these the surrounding meteorological conditions and circumstances, so far as *we know them*, should be duly set forth; then they too will supply us with food for thought.

Maidstone House, Dover, January, 1888.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PAPILIO MACHAON VARIETY.—I have a specimen of *Papilio machaon*, on the anterior wings of which the two squarish black spots on the costal margin nearest the basal patch completely coalesce and form one large blotch. Newman does not mention any variety of *P. machaon*, and I have not seen one at all resembling mine in the Doubleday Collection or in the Natural History Museum at South Kensington. I should like to know if such a variety is of common occurrence.—W. H. JACKSON; 15, Beechholme Road, Upper Clapton, E.

VANESSA ANTIOPA ABERRATION. — Having for several years successfully bred the above species, I was pleased last season, for the first time, to obtain two varieties. They differ from the normal type by the yellow margin being much broader than usual, and in one specimen completely obliterating the blue spots. In the other variety this is the case only with the fore wings. I have sent the latter, with a facsimile sketch of the former, to my uncle, Mr. J. Jäger, of Notting Hill, who intends exhibiting them at one of the meetings of the South London Entomological Society. — WILLIAM WERNER; Biedenkopf, Germany, January, 1888.

VANESSA C-ALBUM IN SURREY.—I have just seen a specimen of *Vanessa c-album*, captured in a garden close to Sutton, three years ago, by a friend.—H. M. LEE; Gladstone House, Sutton, Surrey, February 11, 1888.

BOMBYX TRIFOLII COCOON WITH TWO EXITS.—Mr. Warburg's statement (Entom. p. 15) is well worthy of attention. *B. trifolii*,

unlike *Saturnia pavonia*, does not, of course, spin a regular exit to its cocoon. This did not strike me when Mr. Clark mentioned the fact of his possessing one. However, there is no doubt that Mr. Clark has a cocoon of *B. trifolii*, externally resembling the abnormality in the cocoon of *S. pavonia* given me by Mr. Alderson, and the cocoon in the possession of Mr. Warburg. Perhaps Mr. Clark will make a critical examination of his cocoon and give us the result, as all such abnormal structures are of the greatest interest.—J. W. TUTT; Westcombe Park, S.E., January 18, 1888.

CLOSTERA ANACHORETA. — With reference to the Rev. J. Greene's note as to *Clostera anachoreta* (Entom. 31), I may mention, that in September, 1878, I found one larva of this species at Walmer, and a friend who was with me found another at the same time. I did not know what the larva was until the 5th March following, when the insect emerged.—W. T. HAY; 26, Netherton Road, St. Margaret's, Twickenham, Feb. 3, 1888.

CLOSTERA ANACHORETA. — With reference to the Rev. J. Greene's very interesting note on this species, I would wish to point out particularly a circumstance to which he but slightly, if at all alludes, although he clearly had it in his mind while writing, namely that the balsam poplar is not only a tree that is not indigenous to our islands, but is one that, although introduced long since, has not, I believe, until comparatively recent years, been much grown here. Can any entomologist in Folkestone ascertain when those plantations were made? by what nurseryman? and, from him, whence the young plants came? Four species of poplar grew in these plantations: the white, black, the Lombardy, and the balsam, but *Clostera anachoreta* was confined to the balsam poplars.—C. A. BRIGGS; 55, Lincoln's Inn Fields, February 14, 1888.

DASYCAMPA RUBIGINEA AT CHRISTCHURCH.—I have had the pleasure again of taking a good specimen of this insect on November 28th last. It may be of some interest to note that the only three specimens I have captured in this locality during the past two years have been all in the last week in the month of November, the following being the dates: November 24th, 30th, 1885, and 28th, 1887.—J. M. ADYE; Somerford Grange, Christchurch, January, 1888.

PHIGALIA PEDARIA IN JANUARY.—Whilst walking through the village of Pinner, on the 7th inst., I captured a recently emerged male of the above species. The earliest date I can vouch for previously, for this insect, was 14th February, 1886, when my friend Mr. William Powley secured them plentifully near Hounslow at gas lamps.—PERCY RENDALL, M.D., 20, Lad-broke Square, London, W., January 18, 1888.

AMPHIDASYBETULARIA var. DOUBLEDAYARIA.—In the summer of 1886 an entomological friend, Mr. S. Littler, of Newark, took, *in copulâ*, a pair of the above. From the female a number of fertile eggs were obtained, and as a result a nice series of this variety. Last summer I had sent me, from a village near, another couple alive and *in cop*. The larvæ were very variable—drab, green, black, and some inclined to reddish colour. At various times I have met with this variety in the neighbourhood, but only once have I taken it in the so-called normal condition.—JAS. H. TOMLINSON; Newark-on-Trent, February 3, 1888.

BUTALIS CICADELLA.—In answer to Mr. Farren's note (Entom. 62), I find in 'Entomologists' Monthly Magazine,' viii. 92, Mr. McLachan records one specimen, taken on the heath near Weybridge Station, 1st July, 1871. At page 138 of the same volume, Mr. S. Stevens tells us he took "about a dozen specimens of this moth at Southend, about twenty or twenty-five years ago, in the flowers of a kind of dandelion." The original specimen mentioned in Stainton's 'Manual' was taken by Mr. Dunning, at Brandon.—E. A. FITCH; Brick House, Maldon.

GELECHIA ACUMINATELLA.—When collecting larvæ of *Coleophora theranella* early in September last year I noticed many of the leaves of the seeding plants of *Carduus lanceolata* blotched, and upon examination I found them tenanted with the young larvæ of the above species. They were then small, and as there appeared little chance of carrying them to maturity, I decided to wait till they were tolerably well advanced before collecting them. In the early part of October I had no difficulty in filling my bag with mined leaves, and on arrival home I found the larvæ pretty numerous, most of them being about full-grown, but a few stragglers were to be found as late as the second week in November. I hope these remarks may prove as useful to some of our young entomologists as they would have been to me when I

began systematically to collect the Tineina.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., February 19, 1888.

CARABUS MONILIS IN JANUARY. — On the 27th of January I captured an active specimen of *Carabus monilis* at Harrow, during a sharp frost with snow. It did not appear at all torpid. —M. H. GRANT; 50, Lancaster Gate, London.

ODONTÆUS MOBILICORNIS IN THE ISLE OF WIGHT. — In August last, at Alum Bay, Isle of Wight, I had the good fortune to capture a male *Odontæus mobilicornis*, which is now in my collection. Not knowing the insect, I took it, together with others, to the type collection of the British Museum, Nat. Hist., Cromwell Road, where it was identified. — M. H. GRANT; 60, Lancaster Gate, Hyde Park, February, 1888.

SCARCITY OF EMATURGA ATOMARIA IN 1887.—The most notable absentee in my experience during the past year has been *Ematurga atomaria*, of which I did not see a single specimen in any of the localities where usually it is abundant.—F. J. BUCKELL; 32, Canonbury Square, January, 1888.

THE MICRO-LEPIDOPTERA OF SOUTH DEVON. — I was much interested in Mr. Kane's list (Entom. 34), as during the first three weeks of August last I was staying at Avonwick, half-way on the main-road between Ivy-bridge and Totnes. I was not able to give much time specially to Entomology, but came across several species which do not occur in the list of Mr. Kane. Those whose interest in Lepidoptera is gauged by the comparative variety of the species will say, "What a poor list!" But to those who take a wider view, and study distribution, such lists as mine cannot be wholly valueless. All the species named were taken at Avonwick. Rhopalocera: —*Pieris rapæ*, abundant. *Argynnis paphia*, many worn specimens. *Pararge egeria*, not uncommon in lanes and damp woods. *Epinephele tithonus*, wasted. *Vanessa urticæ*, fairly common. *V. io*, on flowers, especially by the river-side. imago at sugar. *Apamea oculatea*, common. *Neuronie popularis*, at light. *Polia chi*, at rest on walls and trunks. *Amphipyra pyramidea*, common at sugar. *Gonoptera libatrix*, common at sugar. *Mania maura*, at sugar. Geometræ: —*Epione apiciaria*, fairly common, *Lycæna icarus* and *Cænonympha pamphilus*, fairly abundant. Heterocera: —*Lithosia lurideola*, at light. *Bombyx neustria*, at light. *Acronycta alni*, one larva, on a boulder in mid-stream,

probably from a neighbouring oak. *A. rumicis*, larva on dock; *Selenia tetralunaria*, one male on a flower-bed of *Eupatorium*. *S. bilunaria*, larvæ on alder. *Cleora glabraria*, one imago beaten from an ash tree. *Amphidasys betularia*, one larva on alder. *Geometra papilionaria*, larvæ on alder. *Coremia ferrugata*, very common. *Melanthia ocellata*, very common among *Galium mollugo*. *Hypsipetes sordidata*, larvæ on alder. *Cidaria immanata*, wasted.—GILBERT H. RAYNOR; Brentwood, Feb. 10, 1888.

A LONDON FORM OF MELANISM. — With reference to Mr. Cockerell's note on this subject (Entom. 60), the following extract from my diary may be of some interest:—"13th June, 1868,—Sugared in Bishop's Wood, Hampstead, and took (among other things) *Miana strigilis*, 4; var. *æthiops*, 7." It is therefore evident that some twenty years ago the melanic variety considerably outnumbered the type in the north-west district of London. For earlier dates I must trust to my memory, and can speak only with regard to the south-east of the metropolis, but I well remember that, while still a schoolboy, I used frequently to sugar the stems of sundry small fruit-trees in my father's garden at Lewisham. *M. strigilis* was one of the most frequent visitors, and the "black" variety was regarded as much the more common of the two forms. The periods to which I am thus able to refer are, I am aware, much too remote to allow of any definite conclusions being drawn in the direction indicated by Mr. Cockerell, but I trust that they may at least form a link in the chain of evidence that will no doubt be forthcoming upon this interesting subject.—ROBERT ADKIN; Lewisham, Feb., 1888.

BUTTERFLY, ORIGIN OF WORD.—Can you give me the derivation of the word butterfly?—N. H. REID; Oaklands, Beckenham.

[Skeats ('Etymological Dictionary') says: "Anglo-Saxon *butter-fleoge*, from *butor* = butter, and *fleoge* a fly. Dutch *boter-vlieg*, German *butterfliege*." Kilian gives Old Dutch name as *boter-schijte*, showing that its excrement was regarded as resembling butter.—J. T. C.].

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 1st, 1888.*—Dr. David Sharp, F.Z.S., President in the chair. The President nominated Sir John Lubbock, Bart., M.P., F.R.S., Mr.

Osbert Salvin, M.A., F.R.S., and the Rt. Hon. Lord Walsingham, M.A., F.R.S., Vice-Presidents for the Session 1888 to 1889. Mr. Henry F. Dale, F.R.M.S., F.Z.S., of Miserden, Gloucestershire, and 2, Savile Row, W., was elected a Fellow; and the Rev. W. J. H. Newman, M.A., Mr. H. W. Barker, and Mr. J. H. Leech, B.A., were admitted into the Society. Mr. F. Pascoe exhibited two specimens of a species of the Hemipterous genus *Ghilianella*, one of which he found crawling over a low bush at Pará with the young larva securely riding on its back. He said it was the only occasion he ever saw the species with the larva, which was new to Mr. Bates. Dr. Sharp exhibited some insects forwarded to him by Mr. Kidston, of Stirling, collected by Mr. Alexander Carson on Kavalla, an island in Lake Tanganyika: they were sent in spirit, and unfortunately were much damaged in transit. The Coleoptera were nearly all well-known species, exemplifying the fact that many of the commoner insects of tropical Africa have wide distribution there, some of these species being common in Natal and Senegal. The most remarkable of the insects received from Mr. Carson was a large lepidopterous caterpillar, which Dr. Sharp had given to Mr. Poulton; it was covered with very thick sharp spines, all pointed except the terminal one, which was furcate. Mr. Champion exhibited specimens of *Casnonia olivieri*, Buq., *Ædichirus unicolor*, Aubé, *Paussus favieri*, Fairm., *Colydium elongatum*, Fab., *Endophlæus spinulosus*, Latr., *Hetærius arachnoides*, Fairm., *Pseudotrechus mutilatus*, Rosenh., *Singilis bicolor*, Ramb., *Phyllo-morpha laciniata*, Will., all recently collected by Mr. J. J. Walker, R.N., of H.M. ship 'Grappler,' at Gibraltar, Tetuan, and Tangier. Mr. R. South exhibited a remarkable variety of *Polyommatus phlæas*, caught by him in North Devon in 1881. Mr. R. W. Lloyd exhibited a living specimen of a species of *Ocnere* taken in London amongst merchandise imported from Ispahan. Mons. A. Wailly exhibited, and read notes on, a number of cocoons of *Antheræa assamensis*, *A. roylei*, *Actias selene*, *Attacus ricini*, &c., lately received from Assam; also a number of nests of cocoons of *Bombyx rhadama*,—the silk of which is used by the Hovas in the manufacture of their stuffs called "Lambas,"—from the island of St. Mary, Madagascar. Captain H. J. Elwes read a paper on "the Butterflies of Sikkim," the result of many years of collecting in that wonderfully rich district of the Himalayas. He said he had been enabled to complete his observations

during the enforced delay at Darjeeling of Mr. Macaulay's Mission to Thibet, of which he was a member. He stated the number of species occurring in this small district to be about 530, which is greater than the number hitherto found in any locality in the Old World. Of these the greater part only occur in the hot valleys at an elevation of 1000 to 3000 feet, and these are for the most part of a purely Malayan character, whilst those found in the middle zone are in many cases peculiar to the Himalayas; and the few species from the alpine parts of the country at 12,000 to 16,000 feet are of a European or North Asiatic type. An important feature in this paper was the numerous observations taken on the habits, variation, seasons of appearance, and range of altitude of the various species, for which Captain Elwes said he was largely indebted to Herr Otto Möller, of Darjeeling. The paper concluded with an analysis of the species and genera as compared with those found in the North-West Himalayas and in the Malay Peninsula. Mr. J. H. Leech, Dr. Sharp, Captain Elwes, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 26th, 1888.* T. R. Billups, Esq., President, in the chair. Mr. Tugwell exhibited, for comparison, German and Welsh specimens of *Xylina furcifera*. Mr. J. Stringer, a varied series of *Hibernia defoliaria*. Mr. Cooper remarked that while searching for *H. leucophearia* during the previous week, he had seen numbers of *H. defoliaria* at rest on the trees, and it now seemed to be usual to meet with this species in the spring. Mr. Adkin, bred specimens of *Ptilophora plumigera*, which had recently emerged, and he thought that the cold weather experienced at the time the species usually appeared had kept them back. Mr. Carrington, referring to Mr. Cooper's and Mr. Adkin's observations, contributed notes as to the effects of temperature on the emergence of Lepidoptera. Mr. Tutt, on behalf of Mr. Alderson, varieties of *Aplecta tincta*, *Scopelosoma satellitia*, *Anaitis plagiata*, a melanic specimen of *Phigalia pedaria*, and a curious form of *Tæniocampa munda*, which he stated were all taken in the neighbourhood of Bromley. Mr. Carrington said he had frequently taken this form of *T. munda*, and recommended sugaring in the earlier part of the year for the genus *Tæniocampa*, stating that on one occasion he captured numbers

of *T. munda* with commoner species of the genus, at the same time taking a considerable number of *Asphalia flavicornis*, an insect not generally supposed to come to sugar. Mr. Billups, on behalf of Mr. W. F. De V. Kane, *Rhopalomesites tardii*, from Killarney and Powerscourt, Ireland, and invited remarks upon the same, as regards variation; the pale forms, however, were considered to be immature. Mr. Dobson read a paper on "Darwinism," which was followed by a discussion.

February 9th, 1888. The President in the chair.—Messrs. F. Warne, N. Warne, A. T. Mitchell, F. E. Strong, and P. C. C. Billups, M.D., were elected members. Mr. South exhibited, for comparison, forms of *Dianthæcia compta* and *D. nana*, and contributed notes; also a long series of what he stated were known in this country as *Cerastis vaccinii* and *C. spadicea*. He considered these to be two forms of one species, but at present was unable to bring forward any facts of sufficient weight in support of this, but thought he could establish the fact that British Lepidopterists had for years been in error in associating the name of *spadicea* with the dark *Cerastis*, which by comparison with German species of the genus must be referred to *C. ligula*, Esp.; but whether *ligula* is distinct from *vaccinii* is for future research to determine. Mr. South illustrated his remarks with long series of British and German forms of the genus; and, on behalf of Mr. J. H. Leech, exhibited Coleoptera mounted on small triangular pieces of glass, thus allowing the under surface of the specimen to be examined. Mr. Tutt, *Xylophasia rurea*, showing the different forms of variation. Mr. Hawes, a variety of *Epinephele ianira*, one of the upper wings being completely bleached, and a variety of *Argynnis paphia*, the black spots having coalesced and formed bars; both these varieties were taken in the New Forest, 1885. Mr. Jäger, an aberration of *Vanessa antiopa*, the yellow margin of the upper wings obliterating the blue spots, the specimen having been bred in Germany, with another in which the same aberration appeared also on the under wings. Mr. Adkin, life-history of *Ephestia kühniella* in a living state, and called attention to a colony of larvæ just hatched and making their way into the flour. Mr. Croker, a specimen of *Crioceris merdigeræ*. Mr. T. R. Billups, on behalf of the Rev. W. Johnson, of Armagh, a short series of *Bembidium clarkii*, taken at Armagh.—H. W. BARKER, Hon. Secretary.

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[No. 299.

VARIETY OF *SPILOSOMA URTICÆ*.



SPILOSOMA URTICÆ, VAR.

THIS striking variety of *Spilosoma urticæ* is from the late Dr. Harper's last collection. Of its previous history I know nothing. There were other varieties in the series, but none so striking as this.

Although radiated varieties are not rare in its congeners *S. lubricipeda* and *S. menthastris*, I believe in *S. urticæ* they are but rarely met with. This specimen, which is in fine condition, it will be observed from the drawing, is normal in its hind wings.

On the fore wings there are three black streaks, in addition to the usual black dashes near the apex. The first streak, situate immediately below the costal margin, commences a short distance from the base, extending about one-third along the length of the wing. The second streak is situated immediately below the subcostal vein, commencing at the same distance from the base, and extending about two-thirds along the length of the wing. The third streak, extending to a similar length but commencing a little further from the base, is situate immediately below the median vein. The second and third streaks are interrupted, especially at the branches of the veins. There is a black spot at the base of the fore wings.

C. A. BRIGGS.

DISTRIBUTION OF LEPIDOPTERA IN THE OUTER HEBRIDES, ORKNEY, AND SHETLAND.

BY RICHARD SOUTH, F.E.S.

Mr. C. W. Dale, of Glanvilles Wootton, who collected in North Uist and Harris in 1883 and 1884, and Mr. E. R. Curzon, of Forres, who was in Orkney and Shetland during the seasons of 1884, 1885, and 1886, have kindly furnished me with some interesting information respecting the distribution of Lepidoptera in those islands.

On the authority of these gentlemen, I am enabled to add thirty species to the list given (*ante*, p. 28), and also to amend the distribution table as regards some of the species previously enumerated. The following species should have a + inserted opposite their names in the proper locality column:—

ORKNEY.—*Agrotis aquilina*, *A. agathina*, *Noctua brunnea*, *Hadena oleracea*, *Scoparia angustea*, *Crambus ericellus*, *Pardia tripunctana*, *Orthotania antiquana*, *Coccyx tædella*, *Dicrorampha tanacetii*, *Catoptria fulvana*, *Blabophanes rusticella*, *Plutella cruciferarum*, *Gelechia ericetella*, *Æcophora pseudospretella*.

OUTER HEBRIDES.—*Anaitis plagiata*, *Scoparia atomalis*, *Argyrolepis hartmanniana*, *Plutella cruciferarum*, *Blabophanes rusticella*, *Æcophora pseudospretella*.

SHETLAND.—*Xanthia circellaris*, *Phlogophora meticulosa*, *Calocampa retusta*, *Cheimatobia brumata*, *Clepsis rusticana*, *Pamphusia mercuriana*.

The additional species are:—

	Ork.	O.	Heb.	Shtl.		Ork.	O.	Heb.	Shtl.
<i>Cœnonympha pamphilus</i>		+			<i>Incurvaria oehlmanniella</i>	+			
<i>Leucania impura</i>		+			<i>Swammerdamia caesiella</i>				
<i>Nonagria lutosa</i>			+		<i>v. griseocapitella</i>		+		
<i>Mamestra abjecta</i>			+		<i>Depressaria costosa</i>		+		
<i>Agrotis saucia</i>			+		" <i>applana</i>		+		
<i>Pachnobia rubricosa</i>	+				<i>Lita instabilella</i>		+		
<i>Dianthœcia capsicola</i>	+				<i>Teleia proximella</i>		+		
<i>Gonoptera libatrix</i>			+		<i>Monochroa tenebrella</i>			+	
<i>Botys fuscalis</i>		+			<i>Pleurota bicostella</i>		+		
<i>Platyptilia gonodactyla</i>	+				<i>Glyphipteryx thrasonella</i>			+	
<i>Mimæseoptilus</i>)					" <i>fischeriella</i>		+		
<i>pterodactylus</i>)	+				<i>Argyresthia pygmæella</i>		+		
<i>Peronea ferrugana</i>		+			<i>Gracilaria tringipennella</i>			+	+
<i>Pædisca semifuscana</i>			+		" <i>syringella</i>				+
<i>Plutella annulatella</i>	+	+			<i>Coleophora anatipennella</i>	+			
" <i>dalella</i>			+		" <i>cæspitella</i>		+		

The total number of species of Lepidoptera known to occur in these groups of islands now stands at 240: of these 168 have been found in the Orkneys, 146 in the Outer Hebrides, and 96 in the Shetlands.

12, Abbey Gardens, St. John's Wood, March, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

(Continued from p. 87.)

Diloba, St., *cæruleocephala*, L.

Var. *armena*, Stdgr.—Dr. Staudinger, in his 'Catalog,' describes a variety under this name as "much paler; anterior wings cinereous." I have not seen this form. The locality he gives is Armenia.

Arsilonche, Ld., *albovenosa*, Göze (*venosa*, Bkh.).

The type of this species, as its name indicates, has white nervures, which show distinctly on the pale wainscot ground colour. The depth of the ground colour varies from pure silvery white to deep (inclining to reddish) ochreous. A great deal of difference exists in the development of the dark shades under the base of, and above the outer half of the median nervure, and towards the apex. Mr. Warren, of Cambridge, informs me that it is "the specimens of the second (autumnal brood) which have the dark dashes more prominently marked, and the fore wings sometimes more thickly peppered." This form (with the dark shades clearly developed) is figured by Hübner (fig. 380) under the name of *degener*.

α. var. *centripuncta*, H.-S.—The anterior wings of this variety have a black spot in the centre of each wing. The description Dr. Staudinger gives is "*alæ anteriores puncto nigro*." This form has, I believe, at the present time only been recorded from Russia, but some of my specimens from Cambridge have this spot faintly indicated. I should not be surprised to learn that this variety exists in some of our collections.

β. var. *ochracea*, mihi.—The ground colour of this variety is reddish ochreous, and the wing-rays pale ochreous instead of

white, as in the type. This variety occurs in both broods, some of the specimens being almost devoid of the dark shades, others with the dark shades very strongly marked. I have to thank Mr. W. Farren, of Cambridge, for the loan of a fine series of this variety.

γ. var. *argentea*, mihi.—Ground colour silvery white, with no trace of ochreous. My specimen, which is probably of the autumnal brood, is much suffused with dark scales directly above and below the median nervure, also along the costa, and less strongly along the inner margin. Taken very rarely with the type.

LEUCANIDÆ, Gn.

The Leucanidæ are, as a family, remarkable for their pale colour, nearly all of them being of some shade of yellowish or whitish ochreous in their palest forms. Even those which we are accustomed to consider as having the typical colour of some shade of red are found to be grey or ochreous in their paler forms, when long series from far-distant localities are obtained for comparison. In almost all the species of this group the variation in ground colour appears to go through a regular gradation from pale whitish ochreous to yellowish ochreous and reddish ochreous, generally culminating in a deep red. Not only are many of our species subject to these variations in ground colour, but nearly all the family are frequently in all these various forms more or less suffused with black scales. It is therefore in one of these two directions, or in both combined, that the variations of the Leucanidæ generally run. A less important form of variation is in the number of dots which form the transverse rows found in many species parallel to the hind margins of both the anterior and posterior wings. Frequently some specimens of a species have complete rows of these dots, while in other specimens of the same species they are entirely absent, others having a greater or less proportion of the total number suppressed. In most instances, however, two at least are developed on the anterior wings, one directly above, the other below, the median nervure.

Synia, Dup., *musculosa*, Hb.

It may be advisable to point out that Newman's figure, 'British Moths,' p. 273, is nothing like Hübner's type, and that his

(Newman's) description is almost convincing that the specimen he described most probably did not belong to this species. Hübner's fig. 363 is of a bright sulphur-yellow ground colour, with grey nervures, the central area of the wing much suffused with dark grey scales; the orbicular and reniform, of a very pale sulphur, stand out distinctly in the darker central area; the costa has a broad pale sulphur streak, the inner margin is also clear; a pale sulphur wedge-shaped mark extends longitudinally from the outer edge of the reniform to the hind margin, at the point where it meets the hind margin is a small grey blotch. Posterior wings pale sulphur, without any markings.

Var. *myodea*, Rbr.—Mr. Dobrée informs me that the data for considering this a variety of *musculosa* rests upon a single imperfect specimen captured in Andalusia.

Leucania, Och., *conigera*, F.

This species varies very much in ground colour from a bright ferruginous-red with a yellow-orange tint to a deep dusky red much sprinkled with black scales. The continental forms appear to closely resemble our brighter specimens, but I have seen none approaching the more melanic forms which we occasionally obtain in England, and which are very frequent on the west coast of Ireland. The diagnosis of Fabricius, taken from Borkhausen, is: "*Cristata, alis deflexis flavescentibus, strigis duabus, fuscis punctoque medio albo trigono.*" Hübner's figure (222) is a good one of the typical insect as far as the upper wings are concerned, but the posterior wings are coloured bluish, and have a dark margin.

α. var. suffusa, mihi.—The ground colour of the anterior wings of a dusky ferruginous-red, without any trace of the brighter yellowish ground colour of the type, the whole being much suffused with darker scales; the markings exactly like those of the type, but of a deeper colour and more distinct, especially the stigmata; a very dark shade surrounds the reniform, extending to the orbicular; the costa shaded with dark scales, the wing-rays also dark. The hind wings of a very dark smoky grey colour in both sexes, bearing more or less traces of a still darker transverse line. I have this melanic form only from Morpeth and Sligo. My *conigera* from Dundee are as bright as the specimens captured in Chattenden, Strood, Deal, and other

Kentish localities. Brightly-coloured specimens are, however, captured at Sligo with the melanic form.

β. A remarkable abortion of *L. conigera* is figured in the 'Entomologist,' vol. xi., and described at p. 171 as follows:—"This insect has the normal coloration of the upper wings, but the left lower wing is, both in colour and structure, partly like the upper wings, and also has one white spot in the centre."

(To be continued.)

NOTES ON SOME BRITISH TORTRICES.

BY W. G. SHELDON.

Phoxopteryx derasana.—The only note of the life-history of this species I can find is 'Entomologist' xiii. p. 86: "Mr. Barrett writes, Mr. Machin bred it from larvæ found on *Rhamnus frangula*." In this district, where it is not uncommon, the larva feeds upon *Rhamnus catharticus*: this may, however, be owing to the fact that *R. frangula* is exceedingly rare in its haunts.

The larva lives in a very neat and symmetrical domicile, which it forms by folding down a leaf and joining the edges with silk. When small a portion only of the leaf is so treated, and as it approaches full growth whole ones are utilised. Within the abode thus formed it feeds upon the lower cuticle; when all this is devoured, issues forth and forms another retreat. As it grows larger it eats irregular-shaped holes through the walls of the leaf, and when these holes are formed it is careful to spin a web within the leaf, for protection against its enemies. When full-grown (which is about the latter end of September) it descends to the ground, and forms a cocoon amongst rubbish, and in this remains unchanged till the spring. The moth appears early in June. I have been unable to find even young larvæ before the beginning of September; and the long interval that thus elapses, between the emergence of the imago and the appearance of the larva, would appear to give colour to the idea, which I believe prevails in some quarters, that the species may be double-brooded, but I never took a specimen after the beginning of July. It is necessary, in order to rear this species, to winter it outdoors in the wind and rain.

Young larva: active, slender, tapering to anal extremity. Colour very light green, dorsal vessel very plainly visible, head same colour as body. Full-grown larva: length six lines, of average stoutness, tapering much to anal extremity; head and whole body shaded with indistinct hairs; head narrow, glaucous, light brown, round the mouth spotted with black; on the dorsal area where it joins second segment, are two elongated black dashes; second segment glabrous, same colour as head, but spotted with black; dorsal area bounded on each side by a black blotch. Body, colour dark putty; dorsal vessel visible when crawling; each segment (which is somewhat swollen) has several raised spots, lighter in colour than remainder of body, each one of these units a hair; anal segment glaucous and black, spiracles indistinct, prolegs tipped with black.

Conchylis dilucidana.—The larvæ of this species are to be found during the winter and spring months in the stems of the wild parsnip (*Pastinaca sativa*), and from their presence there at that period it has been concluded it was their habit to feed in that manner. See Entom. xiii. 295, where the late Mr. W. P. Weston says, “the larva feeds in the stems of wild parsnip.”

The imago, which in this district is common amongst its food-plant, appears on the wing about the middle of July; during the latter portion of this month, late in the afternoon of fine still days, the female may be seen flying gently amongst the wild parsnip, and settling upon the umbels. If closely observed, it will be found she is depositing ova on the green seeds and flowers, a single one on each. If the seeds of this plant are examined during August and September it will be seen that they are infested with a larva, which is that of *Conchylis dilucidana*.

This larva, immediately it is hatched, burrows into the interior of an unripe seed, and feeds upon the contents; when these are all devoured it eats its way through the envelope of the seed, and connecting the next one with a short tube of silk and frass serves it in the same manner. This process is repeated, when necessary, until the larva is fully developed, which is about the 25th of September; it then leaves the seeds, crawls down the stem until a favourable spot is reached, when it burrows inside; once there it commences to tunnel upwards in the pith, until it

finds a suitable position for passing the winter. This is usually in the upper portion of the stem, two feet from the ground, and at a joint where the pith is solid; here it remains quiescent through the winter and spring months (usually in little colonies of three or four) until June, at which time it gnaws a passage towards the outside of the stem, leaving a very thin skin entire, and then changes to a pupa. The pupa cases are to be found, sticking out of the stem, after the moth has emerged.

In order to successfully breed this insect, it is necessary to leave the stems containing the larvæ in the open air until they have changed; they will not pupate in the close atmosphere of a room. During the early months of last year I collected sufficient stems to breed a large number from, but owing to my taking them indoors in May only about half a dozen emerged.

Although it is the usual habit of the species to hybernate in the stems of its food-plant, there is no doubt a certain percentage do not follow out this practice, but I do not think this is a large one. Some I had in a breeding-cage, on attaining full size, commenced to wander about in search of something to pass the winter in. I introduced to their notice some rotten wood; this, although one or two availed themselves of it, was evidently not to their taste. I then placed some old parsnip stems in their cage. It was singular to see the eager manner with which they took to these, and in a remarkably short space of time every larva had disappeared in them.

Full-fed larva: length three lines, of average stoutness, tapering to each extremity; head shining jet black; narrow, second segment shining, same colour as body, but bordered behind with two black dashes; these do not quite meet in centre: anal segment darker than remainder of body; prolegs black; colour of body yellowish white; spiracles dark, rather inconspicuous; whole body thinly shaded with short hairs.

Addiscombe, January 28, 1888.

NORTHERN LEPIDOPTERA IN 1887.

By J. B. HODGKINSON.

I SELDOM breed any large moths, but on April 19th a fine male *Notodonta chaonia* came out, and a week or two later four *N. trimacula*; one male, without wings, so tumbled about

that it made a female almost as unsettled, and not worth setting. About this time some case-bearers crept up from among a lot of oak-leaves I had gathered at Windermere for *Lithocolletis*. Five of these grew up well. I gave them plenty of air and food, and they are still sticking to the side of the flower-pot. I cleared all the rubbish out of the pot, lest a female, apterous or otherwise, might come out. Knowing how soon the Psychidæ spoil themselves, I got some of my family to watch them several times each day, but the moths are still unemerged. The case is straight. The larva is a dirty white, with a row of black spots; the head a pale bone-colour, with a distinct black ring or collar behind. My troubles now began, for *Lithocolletis lantella* and *L. irradiella* came out by scores, a few *L. amyotella* and *L. kleemannella*, with plenty of *L. frölichella*, and others of the same group, keeping me at home setting. *L. quinqueguttella* came out so fast that I put a dozen or more in a box at a time to kill them. *Ornix loganella* kept turning up through May. I got tired of setting, so determined to have a ramble on the moors. So I took my conveyance about twelve miles, to see if any *Nemophora pilella* were out: this was the first week in June; the day was a bad one, no sun and a cold wind blowing. Some I dislodged from fir-trees, but mostly I found them at rest by seeing their long antennæ moving about. I got about eighteen males. I was evidently a little late, as there were no *Thecla rubi* nor *Gelechia longicornis*; whereas in 1886, it being much colder, the late Mr. John Sang and I saw the latter species about at once on the same date. However, I made a very fair bag, having filled over a hundred boxes from 11 a.m. to 6 p.m. I may note that the *Incurvaria oehlmanniella* were the largest I ever saw, as large as *Lampronia luzella*. I got a fine lot of *Phoxopteryx myrtillana*, *Clepsis rusticana*, and some fine *Peronea ferrugana*.

The week after I paid Windermere a visit, to look for *Micropteryx mansuetella*, a species now nearly lost. Through drainage and cultivation, and the underwood being so thick, I had only a few yards to work on. All the streams and swampy places where the last-named species occurred were dried up. I managed in three days to take twenty, a few only being good. Although I put them in big boxes, and went as early as possible to my lodgings, in a few hours after capture most of them had dried up,

with their hind legs quite rigid out behind them. It was just the same when I tried to bring them home, a distance of fifty miles. The great heat last season made many other species spoil themselves, although I often buried my tin canister, with all the pill-boxes, among wet moss, to keep the specimens cool and alive. When coming up one of the walks a specimen of *Notodonta ziczac* was settling on an oak-trunk, and a little above it was a very large and fine *Cidaria corylata*. Among the golden rod *Ennychia octomaculalis* was flitting about freely in the shade. A fine specimen of *Spilonota rosacolorana* surprised me; no "hips" of roses had been near that I could find.

On my return home a very large *Cabera rotundaria* was flying about my breeding-room,—no doubt an escape. During the month lots of things came into my room to light, such as a fine lot of *Cidaria dotata*, and an endless lot of *Abraxas grossulariata*, *H. vauaria*, *Boarmia rhomboidaria*, and *Lophopteryx camolina*. On looking at some currant-sticks sent me, there were *Sesia tipuliformis* out, one apparently without a head, but otherwise quite perfect. Until I pinned it I could not make it out, as it was unlike anything I had seen. I suppose this will be questioned, but there was no mistake.

In the early portion of July I spent two or three days a week after *Chrysoclista bimaculella*, but to no purpose. The best species I took was *Laverna lacteella*. What an active moth this is about 5 p.m., so unlike the lazy *L. propinquella*: it needs keeping in the net. I made a sweep near where I had taken *C. bimaculella*, and swept a pair, *in cop.*, of what I thought by the large spots were *C. bimaculella*, but they were only *C. schrankella*. I may note also that specimens of the latter, even this hot summer, were larger than usual. I also took *Bucculatrix demaryella*, and four or five *Coleophora orbitella*. I thought one evening I had taken *Eupæcilia manniana*, the setting sun shining on its pale yellow wings; but the perfume of the wild mint made me think it could only be *E. notulana*. What a pest *Bactra lanceolana* was, sometimes flying easily and softly in circles. *Lampronia luzella* was commoner than usual. *Phoxopteryx diminutana*, an insect that spoils itself in the box, occurred sparingly among the willows. *Ptycholoma lecheana* was of great size, and it is years since I took the pretty *Roxana arcuana*. Now and again *Hylophila prasinana* would tumble off a nut-bush. *Leioptilus*

tephradactylus, *L. osteodactylus*, and *Mimæseoptilus plagiodactylus* were also large.

The first week in July I thought I would go early enough to look for *Emmelesia tæniata*, as I wanted specially to get eggs for a correspondent. The intense heat seemed to drive moths, if there were any, into cool places. The result of my hunt was that I took one, *E. tæniata*, with three wings with some scales, but the other top wing was as smooth as the bark of an ash sapling. I forget to mention that in June I bred about thirty *Eupithecia constrictata* from the Isle of Man, and a new series of *E. valerianata* from Windermere.

The second week in July, when in the neighbourhood of Witherstock, *Gonopteryx rhamni*, *Argynnis adippe*, and *A. aglaia* were in plenty. I took a splendid *charlotta* variety of *aglaia* on a flower. I saw *Lycæna ægon* in plenty. It was a treat to see so many butterflies again. There were several *Selidosema ericetaria* (*plumaria*) in hot sunshine and a strong wind. I had a look on the rocks for *Sciaphila penziana*, but not a moth of any sort was to be seen; everything was burnt up, and walking on any slope dangerous. This danger and the Jubilee fires on some of our high hill-tops kept me from *Crambus furcatellus*.

In the first week in August my wife and I mainly looked after the larvæ of *Eupithecia constrictata*. The wild thyme, like other things, was burnt up; but by going as high as it grows, after a week's search we got a few score: they were not easy to breed. White butterflies were in great quantity; in fact all the cabbages, turnips, &c., were without leaves, only the "ribs" of the plants being left by the larvæ. *Lycæna icarus* was very small, but very active.

Early in September I went to the banks of the Wyre to look for larvæ of *Homœosoma senecionis* on ragwort. Not one was to be seen where I used to take them in plenty: the ragwort is gone, hence the reason. Once I took a specimen of *Catoptria expallidana* there, and as I saw some sow-thistles in a bean-field I gathered a bag of it, but there were no larvæ. Being such a good year for wild roses, my wife went in for "hips" of roses for *Spilonota rosæcolana*. I was obliged to paste the gauze down over the pot, for there were hundreds of larvæ sticking on it. How they will turn out I do not know, but they have plenty of air, soil, rotten wood, &c. During September I made several

journeys to Windermere, prospecting new places. The balsam (*Impatiens noli-me-tangere*) seemed all dead with heat, but after the heavy rains it sprang up again, and started with new life, attaining a height of two feet blooming and seeding; but not a trace of *Cidaria reticulata* larvæ until the 30th, when I found three on some plants at a little distance.

Ashton-on-Ribble, Preston, November 26, 1887.

ON THE CAPTURE OF A NEW SPECIES OF *PYTHO* IN JAPAN.

BY GEORGE LEWIS, F.L.S.

ON the 14th June, 1880, I left Nikko at day-break, and after walking about four hours I reached the higher region of Niohozan in good time for some hours' work in the forests growing at an elevation of about 7000 feet. On going up the mountain, after passing the valley vegetation, there was a large area of long grass, mixed with *Lespedeza*, and here and there oaks of a stunted growth, and beyond this I found the mountain covered with a belt of larch and birch for about a mile, and then I came suddenly into a dense forest of pines (*Abies*), where snow remained at intervals under the trees and in the crevices of the rocks where the sun rays could not directly enter. Here spring was just commencing, and insects were lying under bark and stones (which were still covered with hoar-frost) awaiting the warmth which a few days would bring to them. For the first time I now saw *Rhagium*, *Thanasimus*, and a *Coccinella*, allied to the European *ocellata*, and obtained *Pterostichus macrogenys*, Bates, and some curious *Brachylytra*, which Dr. Sharp has recently described, but insects generally, although of a distinctly boreal character, were far from numerous.

The place was above the locality of *Broskosoma* and other mountain species, but one or two species of *Leistus* and *Nebria* were found, and the blue *Damaster*. Here under the pine bark still glistening in the rime of winter was the habitat of *Pytho*.

The species is the largest at present known, and the thorax is anteriorly rounded off at the sides and constricted behind, like *Pytho deplanatus*, and not transverse like that of *niger*, Kirby, or *depressus*, Linn.

PYTHO NIVALIS, n. sp.

Elongatus, depressus, niger, vix nitidus; elytris violaceis; antennis pedibusque brunneis. L. 16—17 mill.

Elongate, depressed, shining; head and thorax and under side black, elytra violet or bronze; mouth organs, antennæ, tibiæ, tarsi, thoracic sutures, and lateral margins of the elytra narrowly brown. Head uneven and very sparsely punctulate, rather parallel, widest just behind the eyes, eyes granulate and rather prominent; thorax with a slight medial canaliculation, with a large lobe-like depression on each side, widest in the middle, the lateral outline is semicircular anteriorly, and a little constricted at the base; elytra are smooth and raised in the humeral region, with ten or eleven well-marked striæ, for four-fifths of their length.

Wimbledon, December 9, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA ABERRATION.—In the year 1883 I reared about a dozen of this lovely insect, and was fortunate enough to obtain an interesting variety. The white marginal border of both primary and secondary wings was broader, and its edge less sharply defined towards the base of each wing than is usual in the type. The two white spots on the costa of the primary wings were small, the blue spots parallel with the hind margins only faintly indicated, whilst they were entirely obsolete on both secondary wings. This variety apparently corresponds exactly with one of those specimens referred to (Entom. 89-96).—WILLIAM POWLEY; Hounslow, March 5, 1888.

PAPILIO MACHAON, VARIETIES OF.—Concerning varieties of *Papilio machaon*, the spots between the black margin and black submarginal band are, in one of my specimens, twice the size of those in another. There are also differences between the black spots of the costa. These were both taken at the same spot, near Eisenach, Germany.—R. C. CYRIAN; 33, Douglas Road, Canonbury, London, N., March 8, 1888.

SEX OF WINTER-FLYING BUTTERFLIES.—In answer to Mr. Clifford's remarks (Entom. xix. 178) upon the above subject,

whilst walking along the Poole Road on the 26th February I was surprised at finding the enclosed pair of *Gonepteryx rhamni*, male and female, settled upon heath, about four inches apart. Snow was lying in patches, the wind north-east and cold.—J. H. FOWLER; Grove Road, Wimborne, March 5, 1888.

CÆNONYMPHA PAMPHILUS WITH ADDITIONAL OCELLI.—Last summer, in Wales, I caught a curious variety of *Cænonympha pamphilus*. Each of the ocelli on the under surface of the wings has a supplementary spot below it, and attached to it, of about one-third of the diameter of the normal spot. These supplementary spots have white centres.—E. P. LARKEN; Gatton Tower, Reigate.

PUPATION OF COSSUS.—With reference to the notes on this subject (Entom. xx. 231—234; xxi. 56) I may state that here I always take *Cossus* pupæ from the sand-cops adjacent to an infested tree. My late friend Mr. Harmer was the first to enlighten me as to their—to me—strange method of pupation. On June 4th, 1886, whilst awaiting his arrival, I was busy cutting away at a dilapidated willow which I knew contained *Cossus*, from the peculiar pungent smell emitted. On his arrival he jocularly remarked that I might proceed with my firewood chopping, and he would try and get me some pupæ. In a very short time he found, I see by my diary, fourteen pupæ. His method was to feel along the top of the sand-cop until he came to a soft place, which he could generally tell by the boring of the larvæ previous to pupation. Then he would gently lift the pupæ, sometimes two at once. Near here, to my knowledge, he once got in about an hour about fifty pupæ in this way. It was owing to his keen powers of observation that he found out this way. There were some slender willows only about an inch and a half in diameter, which were riddled with the borings; then he cut one open and found many larvæ, but no pupæ; this led him to wonder where they pupated, and feeling about an adjacent cop he found out the secret by finding some pupæ. The fourteen he got me along with another half-score from another cop all emerged on or about the 10th of June. I should be inclined to think that Mr. Hilton's supposition is wrong (Entom. 56), that the pupæ are to be found in November. I have found scores, but never before May. I looked last week, but only found about

a dozen empty cases. Last year I went on May 30th, but owing to the exceptionally hot weather, although a week earlier than the previous year, I was too late, and only found one good pupa and a newly emerged female. I found quite thirty empty pupæ, which looked very peculiar sticking up above the top of the cop facing south. In the cops they make a tough case like *Dicranura vinula*, only not so hard. On leaving the case the brown skin of the pupa protrudes about half an inch. We have both noticed many times that the larvæ feed inside the grey sallow only (*Salix cinerea*, I think), where both it and others grow together; this alone is infested, and I should like to have the opinion of other entomologists if they have also noticed this fact.—R. C. IVY; Town Hall, Southport.

BOMBYX TRIFOLII COCOON WITH TWO EXITS.—In reply to Mr. J. W. Tutt's inquiries (Entom. 89), I have made a careful examination of the cocoon of *B. trifolii*, and it is my opinion that the larva has made two distinct exits. In my experience with cocoons such as *B. trifolii*, the end that the insect emerges from is thinner than the other part of the cocoon, and in this case I find it is the same. Mr. J. Warburg suggests that this may be an instance of two closely adjacent cocoons. I find it is not so, though I did not breed the moth, for on opening the cocoon I only found one pupa and the skin of one larva.—J. A. CLARK; The Broadway, London Fields, N.E.

MIANA STRIGILIS, MELANIC FORM OF.—In reply to Mr. Cockerell's interesting note on the black form of *M. strigilis* (Entom. 60), I have never seen the melanism in this species, except near London. The type occurs in Berkshire, Oxon, North Devon, Southport, and Hampshire, where I have collected. I have taken the melanic form at Hendon, Dulwich, Croydon, and Hackney Downs, but it does not seem to be common in Epping Forest. I never saw the black variety until collecting in the London suburban district.—J. HENDERSON; 58, Romola Road, Herne Hill, S.E.

MIANA STRIGILIS, MELANIC FORM OF.—With regard to this subject, the following note may be of some interest. In June, 1886, I captured in my garden at Clapton in one evening nine *Miana strigilis*, of which eight were the var. *æthiops*. Last year I sugared on three evenings in the same place, but did not find a

single specimen of the type, among a large number captured. I believe that the variety is looked upon by lepidopterists in this neighbourhood as of much more frequent occurrence than the normal form.—M. CAMERON; 102, Clarence Road, Clapton, E.

MELANISM NEAR LONDON.—With regard to London forms of melanism (Entom. 60), perhaps I may mention that I have dark forms of *Miana strigilis*, taken in Chiswick, in 1878 and 1879, and also the black form of *Eupithecia rectangulata*, taken here in 1877 and 1878. Other dark forms, such as the dark reddish form of *Hybernia defoliaria* and the suffused form of *Oporabia dilutata*, are common in the district.—ALFRED SICH; Burlington Lane, Chiswick, W., February 13, 1888.

GORTYNA OCHRACEA.—In reply to the remarks on the appearance of *G. ochracea*, made by Mr. Sutton and Mr. Phillips (Entom. 60), I may state that for some years past I have taken this insect in the neighbourhood of Hampstead, during the month of September, and once on the 7th October. I was not aware that it appeared earlier in the season, though on referring to Newman I see that June is the month given.—JOHN LEA; 2, Elm Villas, Hampstead, February 9, 1888.

CLOSTERA ANACHORETA.—Some particulars of the appearance of this insect in 1859 have passed under review,—possibly all on record; but I think that its history would scarcely be complete without taking note of the fact that in that year specimens were obtained by me from larvæ which fell to my net whilst beating the sallows in a field near Saltwood, in Kent. I do not clearly remember whether I sent any notice to the 'Entomologist' at the time, but if I did not do so it was because of the announcement which had been made by Dr. Knaggs.—SIDNEY COOPER; Hawkwood, Chingford, March 5, 1888.

CHESIAS SPARTIATA IN FEBRUARY.—On February 9th my friend Mr. G. Rose, of Barnsley, kindly gave me a fine freshly emerged specimen of this insect, and said it was the fifth that he had bred this year. The winter has been an exceptionally mild one here, but that would hardly explain a September and October insect emerging in January and February.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

RUMIA LUTEOLATA, VARIETY.—The variety of this species recorded by Mr. Tero (Entom. 15), in which the brimstone-

yellow is replaced by pure white, is of very great interest. The primitive colour of white flowers is supposed to have been yellow, and the prevalence of these two colours in the Cruciferae shows their close relationship. The white *Pieris rapæ* is occasionally yellow, and *P. oleracea* has a yellow aberration of its form *venosa* on the Pacific slope of North America. Further, white pigments may sometimes be turned yellow by the action of a caustic alkali. All these things seem to me to point to the conclusion that as the red of *Chelonia caia* is a higher form of the chrome-yellow of *C. villica*, so the white of *Pieris rapæ* is a more complex form of the same sulphur-yellow that we see in its variety *norangliæ* and in *Rumia*. It is probable that the climate of Europe once resembled that of North America far more closely than now, and this may explain the unusual frequency of yellow forms of *P. rapæ* in America, supposing them to be atavisms induced by a return to something like the old conditions, and it is worthy of remark that Mr. W. H. Edwards considers *venosa* to be an older form than the Atlantic slope *P. oleracea*. According to this view, the variety of *R. luteolata* in which the yellow is replaced by white, which may be conveniently called *albescens*, is a case of unusual metabolism of a pigment which in that species normally stops short at the sulphur-yellow stage. I may say, in conclusion, that I shall be infinitely obliged to anyone who will send me particulars (as full as possible) of any variations from the normal type in insects, however slight.—T. D. A. COCKERELL; West Cliff, Colorado, U.S.A., January 30.

LEIOPTILUS LIENIGIANUS AT CROYDON.—As far as I can ascertain, *Leioptilus lienigianus* has not yet been recorded as occurring in Surrey. On the 18th July last I captured a specimen, which was feasting on the flower of a thistle. I have since made a careful search for its food-plant (*Artemisia vulgaris*), but am unable to find it within two miles of the spot where the specimen occurred. As the species is endued with only a limited power of flight, it therefore seems possible that there may be some other pabulum.—W. G. SHELDON; Addiscombe, January 21, 1888.

ABUNDANCE OF RHOPALOCERA IN 1887.—I have been surprised to learn from several correspondents that they have found butterflies remarkably scarce during the past season. My experience has been exactly the reverse, for although I took no rare

butterfly I found the commoner species very numerous. In June and July I was staying near the Savernake Forest (Wilts.), where the Argynnidæ were swarming. One pine and larch enclosure, with a thick undergrowth of bramble, was alive with remarkably highly coloured *Argynnis paphia*, and in an open space covered with flowering thistles *A. adippe* and *A. aglaia* were equally abundant. Moving amongst the thistles caused hundreds of butterflies to rise. Almost every thistle-head was occupied by *adippe*. On one bloom I counted eight specimens of that insect. Besides the *aglaia* and *adippe*, a few worn *euphrosyne* and *selene* were flying. Among the Vanessidæ, *Vanessa io* was certainly the most abundant; many nettle patches were covered with larvæ. I took about ninety, and with one exception they all attained the imago state. I think *V. urticæ* must have suffered much from Ichneumonidæ, for although they abounded in the larval state I observed very few imagines. I took half a dozen fine specimens of *V. polychloros*, and had several others brought to me. The Satyridæ were well represented as usual. *Melanargia galatea* I found in great abundance at Rabley Wood, near Marlborough; but they were unusually small, and the dark markings much paler than usual. *Pararge egeria* and *P. megæra* were numerous, and *Epinephele ianira*, *E. tithonus*, *P. hyperanthus*, and *Cænonympha pamphilus*, swarmed everywhere. Of the Lycænidæ, *Thecla quercus*, which is generally very scarce in this neighbourhood, was very plentiful last July and August. I also took a long series of *T. w-album* in Savernake Forest. *Polyommatus phlæas* was exceedingly abundant on some heaths near here, and a bank of wild thyme seemed a great attraction to this little butterfly. On some chalk-hills on the borders of Hants and Berks, the beautiful *Lycæna corydon* was seen in unusually large numbers. I took several varieties of the male. *L. icarus* was also numerous, and *L. astrarche* was seen occasionally among its brighter-hued congenitors. The Pieridæ were decidedly the insects of the season. Throughout the summer the cabbage-fields and plots abounded with *Pieris rapæ* and *brassicæ*. I examined many plants, and found every leaf thickly dotted with ova. I tore off a piece of cabbage-leaf about two inches square, on which I counted eighteen ova, and while I held it, two female *Pieris rapæ* came and deposited eggs upon it. I believe *Euchloë cardamines* was plentiful in the water-meadows here in June, but as I was out of

England at the time, cannot vouch for the truth of the statement. Of the Hesperidæ, *Hesperia sylvanus* and *H. linea* were naturally the most plentiful; but my brother took a good series of *Nisomades tages* and *Syrichthus malvæ* at Sherborne (Dorset), where he says they were fairly abundant.—MINNIE KIMBER; Cope Hall, near Newbury, Berks.

LEPIDOPTERA IN THE ISLE OF WIGHT.—Amongst other insects the following fell to my net last summer in the Isle of Wight:—Male and female *Sphinx convolvuli*, *Sesia fuciformis*, *Colias edusa*, *Limenitis sibylla* (scarce), *Thecla betulæ*, and *T. pruni*, at Freshwater. The Pieridæ were poorly represented, considering the favourable locality; indeed, there seemed to be a general scarceness of insects, especially of the Noctuæ.—M. H. GRANT; 60, Lancaster Gate, Hyde Park, February, 1888.

LEPIDOPTERA OF GLAMORGAN.—Though several entomologists of great merit are to be found in other parts of the country, this particular corner of Glamorgan is almost virgin soil to the collector. Were this county more carefully hunted I am sure we should figure oftener in lists of localities. Our geological formation is blue lias, and our soil a stiff yellow clay heavily charged with lime—a most unpropitious one for pupa-digging; but this is compensated for by the unusually large amount and variety of timber, oak, ash, and elm being well represented. Situated as we are on the coast, within a mile or two of the southernmost point of the principality, and facing the south, we enjoy an exceptionally mild, not to say “muggy,” climate. Some of our most characteristic Rhopalocera appear to be *Argynnis paphia*, *Vanessa atalanta*, *Melanargia galatea*, and *Thecla quercus*, and I have also taken *T. w-album*. In the year 1877 we had our full share of *Colias edusa*, when I could have boxed any number on the clover-fields along the coast, and when I was fortunate enough to secure two very perfect specimens of the variety *helice*, which I still possess in all its primitive freshness. I have sought for *Aporia crategi*, reported from Cardiff years ago, but in vain, though blackthorn abounds. Here, as elsewhere, there appears last year to have been an abundance of *Sphinx convolvuli*; numerous captures are reported from Swansea, and one flew in through my bedroom window to a lamp. In a previous year I took one on palings in July. Last June I took a specimen of

Hylophila bicolorana, which I do not think is generally found so far west; and in September one specimens each of *Cirrhædia xerampelina* and *Xanthia aurago*. *Toxocampa pastinum* occurs in abundance, and *Plusia chrysitis*, *Smerinthus ocellatus*, *Sphinx ligustri*, *Cossus ligniperda*, *Hepialus hectus*, *Calligenia miata*, *Calimorpha dominula*, *Psilura monacha*, *Urapteryx sambucata*, *Eurymene dolobraria*, *Pericallia syringaria*, *Selene bilunaria*, *S. tetralunaria*, *Crocallis elinguaris*, *Ennomos alniaria*, *E. quercinaria*, *Cleora lichenaria*, *Phorodesma pustulata*, *Geometra vernaria*, *Thera simulata*, *Melanthia albicillata*, *Phibalapteryx tersata*, *Scotosia rhamnata*, *Cidaria miata*, *Nonagria arundinis*, *Agrotis lucerneæ*, seem to occur not unfrequently, while the larva of *Acronycta alni* was taken at Fonmon Castle, three miles from here, two years ago. In conclusion, I may add my belief that we should all become far better acquainted with the entomology of our respective counties were local entomological societies formed as suggested in your columns.—WILLIAM E. R. ALLEN; Porthkerry Rectory, Cowbridge, Glamorgan.

SCARCITY OF INSECTS IN 1887.—I think I can confirm the experience of Mr. William Powley (Entom. 19). In the summer of 1887 I was at Bognor for some five weeks, and during my whole stay there, notwithstanding I was entomologising on every fine day, I saw but one specimen each of *Vanessa cardui* and *Colias edusa*. At the end of September I was much surprised by beating two or three specimens of *Abraxas grossulariata*.—R. C. CYRIAN; 33, Douglas Road, N.

PUPA-DIGGING.—This district is almost devoid of trees, and entomologists have tramped miles on a pupa-digging excursion and spent the day with poor success, sometimes only bringing home about half a dozen pupæ, after digging round as many as fifty or sixty trees. Some time ago I came to the conclusion that not a tenth part of the arboreal feeders pupate under the trees, or we should find more pupæ than we do. Again, seeing the very great numbers of moths whose larvæ are ground-feeders, it has often been a puzzle to me how to find the pupæ. Early in December of last year it occurred to me to try a rough piece of ground near my house, covered in summer with dock, knot-grass, ragwort, and various kinds of weeds, and having provided myself with a hook, with two prongs fastened to the end of a strong walking-stick, I proceeded to rake over the ground. The

result was simply astounding; after an hour's work I was obliged to give up, as darkness had set in. When I arrived at home I counted my captures, and found that I had got 280 pupæ of various kinds. Doubtless I could have taken as many or more larvæ, but I left them to pupate in due course. I have been several times since then and taken more pupæ, but the hibernating larvæ are as plentiful as before, not having yet pupated. I send this as an encouragement to pupa-diggers, who no doubt have been often disappointed as I have. The best places are the hummocks of couch grass (*Triticum*); dig under them about four inches from the surface, and tap the sod, when the pupæ come tumbling out eight and ten at a time.—JOHN N. YOUNG; 85, Filey Road, Rotherham.

THE COLORADO BEETLE.—In the February number of the 'Entomologist,' Mr. T. D. A. Cockerell mentions with some surprise the rarity of *Chrysomella 10-lineata* in Colorado, and rather doubts the occurrence of the species there. There is no question of the occurrence of the insect in Colorado; but it is rare where the cultivated potato does not offer an attraction and an artificial field for its increase. For some time after its discovery it was comparatively an uncommon species, feeding on *Solanum* in little colonies here and there as with other species, and kept in check by its natural enemies. When the cultivated potato reached this belt the conditions changed, and it began to spread with great rapidity along this line of cultivation, until it became the destructive pest we now know it. A similar instance of rapid spread is found in the case of *Aramigus fulleri*, Horn. When first described, in 1874, but a single specimen from Montana was known, and for two years thereafter it remained a rarity. Suddenly, however, in 1876 it began to come in from growers of roses, in great numbers, from all parts of the country, with complaints of injury caused, until "Fuller's Rose-beetle" is well known to, and dreaded by, owners of hothouses everywhere. It is just as rare in Montana, however, as it was when first described.—JOHN B. SMITH; Washington, D.C., U.S.A.

ERRATUM.—In last number, p. 93, line 16 from foot (in Mr. Adkin's note), for "remote" read "recent"; and the sentence should read:—"The periods to which I am thus able to refer are, I am aware, much too recent," &c.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *March 7th, 1888.*
Dr. D. Sharp, President, in the chair. Mr. Frederic Pennington, jun., of Broome Hall, Holmwood, Surrey; Mr. W. Crush, of Westcombe Park, Blackheath, S.E.; Mr. J. P. Cregoe, of Charleston, U.S.A., were elected Fellows; and Mr. H. Rowland Brown, B.A., was admitted into the Society. Mr. J. H. Leech exhibited, and made remarks on, a number of butterflies forming part of the collection made for him during last summer by Mr. Pratt, at Kiukiang, Central China. The specimens exhibited included *Papilio macilentus*, hitherto only recorded from Japan; varieties of *P. sarpedon*, and a supposed new species of *Papilio*; a series of *Sericinus telamon*; *Acræa vesta* (varieties); *Charaxes narceus*, and var. *mandarinus* (the latter being the common form at Kiukiang); *Palæonympha opalina*, Butl.; new or unknown species of *Lethe*, *Apatura*, and *Neptis*; and a series of *Argynnis paphia*, with the var. *valezina* of the female. Mr. Leech stated that all the females of *A. paphia* taken at Kiukiang belong to the var. *valezina*, the typical form of the female being unknown there. Mr. Poulton expressed his interest in Mr. Leech's statement that *valezina* was the only form of the female of *Argynnis paphia* known at Kiukiang, and said he considered this fact would probably throw a new light on the question of the dimorphism of the species. Mr. Jenner Weir said he had in the course of some years obtained a series of forms intermediate between the typical female and the variety *valezina*. Mr. H. Goss, Mr. M'Lachlan, Dr. Sharp, and Mr. Leech continued the discussion. Mr. Champion exhibited, for Mr. J. J. Walker, R.N., about 950 species of Coleoptera, recently collected by the latter near Gibraltar. Mr. M'Lachlan called attention to the large number of water-beetles included in Mr. Walker's collection. Mr. Kirby suggested that the attention of the Imperial Institute should be called to the interest attaching to the exhibition of local collections of insects from British Colonies and possessions. Mr. Verrall exhibited living specimens of *Aspidomorpha sanctæ-crucis*, and another species unnamed, from the caves of Elephanta. Mr. Slater exhibited specimens of a species of weevil which had been doing much damage to maize:

sent to the Colonial Exhibition. Mr. W. White read a paper on "Experiments upon the Colour-relation between the pupæ of *Pieris rapæ* and their immediate surroundings," which comprised a detailed account and discussion of a series of observations carried on, at the author's instigation, by Mr. G. C. Griffiths, of Bristol. The various experiments were intended to act as a further test of the conclusions arrived at by Mr. E. B. Poulton in his paper on the subject recently published in the Transactions of the Royal Society; and to effect this object different and additional influences had been brought to bear on these pupæ, so that an analogy might be drawn between the two sets of results. Mr. Poulton, Lord Walsingham, Mr. Jacoby, Dr. Sharp, Mr. White, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 23rd, 1888.* T. R. Billups, F.E.S., President, in the chair. Mr. Routledge exhibited a number of preserved lepidopterous larvæ. The Secretary read a paper, "Notes on the *Geodephaga* in Ireland," contributed by the Rev. W. F. Johnson, of Armagh. The author said that the number of species of *Geodephaga* at present known to occur in Ireland was only some 140, out of 300 and odd species in the British List. This apparent disproportion of numbers arose from the fact that Ireland had never been properly worked for Coleoptera. Consequently it might reasonably be supposed that a more thorough investigation would raise the number in the present list very considerably. That such an undertaking would be amply rewarded might be gathered from the fact that he had single-handed taken in the Armagh district, in the four years since he began to work at the Coleoptera, upwards of seventy-six species of *Geodephaga*, many of which had not been previously recorded as Irish. He, however, felt sure that if the south and west, the sea-coasts and the mountains were searched by earnest workers, not only would most of the gaps in the present list be filled, but probably many new species would be added to the Coleoptera of the British Isles. A list of the species captured, with observations thereon, followed. An exhibition of microscopical objects was then given: Messrs. Dadswell, Terry, Macer, Coombs, Shaw, Turner, Adkin, West, Tutt, Medland, and others exhibited.

March 8th.—The President in the chair. Messrs. H. Robson and H. A. Auld were elected members. Mr. R. Adkin exhibited a variety of *Eubolia bipunctaria*, the whole of the ground colour of the fore wings being black, the whitish grey basal patch and central fascia, on which latter the usual central spots were very prominent, being the only markings visible, and having correspondingly dark hind wings. The specimen was taken by Mr. O. Dannenberg at Box Hill, July, 1886. Mr. C. H. Watson, a variety of *Phibalapteryx tersata* from the New Forest, 1887. A note was read by the Secretary from Mr. T. D. A. Cockerell, on the origin of *Gonopteryx cleopatra*, which in his opinion arose as a seasonal variation. *Colias eurytheme* of Boisduval, generally distributed throughout the States, had on the fore wings an orange patch on a yellow ground, precisely similar to that of *G. cleopatra*; there was however a seasonal form, *keewaydin* of Edwards, which emerged from hybernated pupæ, and had the orange patch much reduced, in some specimens being almost or entirely suppressed. The seasons in America being very marked, the summer and winter types must necessarily alternate; but supposing the Northern States to become uniformly cold, the Southern uniformly warm, what would happen? Was it not obvious that the winter form of *C. eurytheme* would be perpetuated in the north, while the summer form would be prevalent in the south, thus producing species (for so they would then be called) exactly analagous to *G. cleopatra* and *rhamni*? Many things pointed to the fact that the seasons were once extremely marked in Europe; and he had no hesitation in saying that in those old days *G. rhamni* and *G. cleopatra* were but seasonal forms of one and the same species. A further note from Mr. Cockerell was also read with regard to *Agrotis suffusa*, which he said was abundant in America, and was generally known as *A. ypsilon*, it having been described under this name in 1776 by Von Rottenberg. This name, being prior to that of Hubner, unless sufficient reason could be given to the contrary, should be adopted in England. An additional synonym was *A. telifera*, Harris, 1841. Mr. John T. Carrington read a paper, "British Salmonidæ and their culture," which was followed by discussion.

—H. W. BARKER, *Hon. Sec.*

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[No. 300.

PROPOSED NEW ENTOMOLOGICAL SOCIETY.

It will be remembered that Mr. Coryndon Matthews (Entom. 10) propounded a scheme for a new Entomological Society. That article was inserted without any editorial remarks, in the hope that independent opinions might be received upon the subject, and with the fear that such criticism might prejudice free discussion. Having now waited a considerable time without receiving any lengthened communication — although a large number of private letters have been sent to me, as Editor, advocating various modifications of Mr. Matthews's proposal—it seems desirable that we should return to the subject in these pages. It is clear from these letters that there is a general desire on the part of country entomologists, and I may say students of every branch of Biology, to associate themselves under some such organisation for mutual assistance.

Mr. Matthews's suggestions are, as a whole, admirable, and were there a larger number actively engaged in the study of Entomology the scheme as suggested by him would doubtless work well. If we take, say the list of subscribers and contributors to this Magazine, who really represent much the larger portion of those actively at work on Entomology, we find that by far the greater number are those who live in the larger towns; many of such towns having their local societies. The country entomologists appear to be in little batches of twos, threes, or fours, working together from the smaller towns. Of course there are many isolated students, for whom Mr. Matthews

more especially pleads, but their isolation is usually so great that it is difficult to bring them into closer association with others similarly situated. All these facts have been carefully considered by those who are more especially anxious to assist in bringing about the desired union; but there is considerable difficulty in carrying out this proposal as regards entomologists alone.

Foreseeing this difficulty, the Council of the South London Entomological and Natural History Society have been approached, with a view to rendering that Society the centre of some such organisation. The Council have expressed their willingness to co-operate, and there appears to be no reason why an association of country members, in connection with that Society, should not be developed on almost the identical lines proposed by Mr. Matthews, the Department to be managed by a Special Committee for the purpose, with an Organising Secretary.

The following are the advantages offered to country members studying any branch of Biology, entomological or otherwise:—

(1) That specimens, in limited numbers to be decided by the Committee, may be sent to the Organising Secretary for the purpose of identification, the naming of which will be gratuitously undertaken by various members of the Society. These will be returned, as far as possible, duly labelled, and must be sent properly packed and carriage-paid, with addressed and prepaid label for return; the whole being sent at the risk of the sender and without cost to the Society.

(2) The use of the Society's Library, by payment of carriage each way of books, subject to the Library rules.

(3) The receipt of the Society's Transactions as published.

(4) A reference list, divided into counties, of the names and addresses of all Biologists who subscribe to the Society, with the particular branch which they study, indicated after each name.

(5) Opportunities of attending the Annual Excursions with the general members of the Society, and attending the Annual Exhibitions.

Biologists living upwards of thirty miles from London will be eligible for country members.

Any further particulars may be obtained on application to the Organising Secretary, Country Members' Department, South London Entomological and Natural History Society, Bridge House, London Bridge, E.C.

It is only necessary for the success of this enterprise, which seems to be so universally desired,—for I have received favourable communications from almost every part of the United Kingdom—that those who desire to be in closer touch with their fellow-workers, should as early as possible enrol their names as country members of the South London Society, the subscription being absolutely nominal in comparison with the advantages received.

It would be desirable, when sending names for election, to state whether the candidate is willing to act as local Organising Secretary in conjunction with the London Secretary; also the particular branch of Biology studied, with reference to at least a couple of known biologists.

So far as appertains to the Entomological Section of this proposed organisation, the members may depend upon receiving all possible support and assistance from this Magazine.

JOHN T. CARRINGTON.

New Broad Street House, London, E.C., April 22, 1888.

DIPLOSIS PYRIVORA, RILEY, THE PEAR-GNAT.

By R. H. MEADE.

AMONG the numerous insects which injure our fruits and vegetables, there is a little two-winged fly belonging to the family of Cecidomyiidae, or gall-gnats, which feeds (in the larva state) upon young pears.

The eggs are laid by the female flies (which possess a very long and slender oviduct) in the interior of the blossom-buds of the pear-tree, before they expand. They are said to deposit the eggs upon the anthers of the flower, sometimes piercing through the unopened petals to reach them. The eggs soon hatch, and the little maggots bore into the core of the young pear, where they quickly increase in size, and spread and eat in various directions. The vitality of the fruit is not destroyed at once, but it continues to grow; sometimes becoming, however, distorted and lumpy in shape. By the time these young pears have become an inch or two long the larvæ will have attained their full growth, and the fruit has become partly rotten and disorganised in its

interior. If it is now cut open the core will be found partly hollow, the fruit fissured in various directions; and, surrounded by excrementitious matters and *débris*, from ten to thirty little yellowish white maggots may be seen. The pears now fall off or crack, when the larvæ leave the fruit, which they seem especially inclined to do in wet weather; the rain either making the pears crack or penetrating into the fissures, when the larvæ creep out, and, if the pears are still on the tree, spring to the ground, they possessing, like other species of *Diplosis*, the power of skipping or jumping. As soon as they reach the earth, they bury themselves, and after assuming the pupa-state remain hidden in the ground until the following spring, when the imagines emerge to renew their depredations.

The ravages committed in orchards by the pear-midge, were known in Germany and other parts of the continent of Europe many years ago, and the habits of the little pest were well described by several naturalists. Schmidberger seems to have been the first who accurately detailed its life-history, and his account, copied from papers published in the 'Isis' and other periodicals between 1827 and 1837, was well given by Vincent Kollar in his treatise upon injurious insects, published in Vienna in 1837, and translated into English by Loudon, with notes by Westwood, in 1840. Though the habits of this little insect were well known, the scientific description of it was so imperfect, that its name could not be accurately determined by entomologists. The *Cecidomyia nigra* of Meigen was put down as the pear-midge by Schmidberger, and his opinion has been generally followed, though, as Professor Mik says,* "How Schmidberger could be led to consider his *Cecidomyia*, bred from pears, as *C. nigra*, Meig., I can only explain by its possession of a long ovipositor." Nördlinger, in 'Die Kleinen Feinde,' in 1869, describes another pear-midge by the name of *Cecidomyia pyricola*, but his account is so poor that the species cannot be recognised, and his insect and Schmidberger's are probably identical. To clear up the matter and determine the genus and species of the pear-midge, it became necessary to breed examples of the fly from larvæ found in the pears themselves; and the credit of being the first to do this is due to Dr. Riley, the celebrated American State Entomologist.

* In the translation of a letter from him to Dr. Riley, published in the 'Report of the Entomologist' for the year 1885.

Special attention was directed to the subject in America a few years ago, by the fly having committed great ravages in one limited region near Meriden, Conn., in a great fruit-farm belonging to Messrs. Coe Bros. In the spring of 1881 these gentlemen wrote to the State Department of Agriculture about it, but no attention seems to have been paid to the matter before June, 1884, when it was taken up. The young pears seem to have been affected there, in exactly the same manner as those blighted by the midge in Europe; and until this fly was found upon the Coe farm no insect of similar habits had been known in America, so Dr. Riley suspected that it had been brought into the country, and was not indigenous. This theory was supported by the fact that Mr. Coe had imported a large lot of pear-stocks from France seven years before, upon which American pears were grafted. Finding from Professor Mik, of Vienna, that the nature of the European pear-midge was doubtful, and the *C. nigra* of Meigen practically a lost species, being now unknown in collections; Dr. Riley carefully reared a number of specimens of the little fly of both sexes from the larvæ in pears, and minutely described and figured them; publishing his descriptions and figures in the American 'Report of the Entomologist,' published by the State at Washington in 1886. He found that the insect belonged to the genus *Diplosis*, Lw., and suggested that it should be called *D. pyrivora*, giving the names of *C. nigra*, Meig., and *C. pyricola*, Nördl., as doubtful synonyms. I have great pleasure in adopting Dr. Riley's suggestion, and have placed his name at the head of my paper.

The pear-midge has only attracted the notice of naturalists or fruit-growers in England during the last few years, probably because it has not hitherto caused much loss to the general cultivators of pears. I have not heard that it has been found in those counties where perry is made, or in other districts where pears are grown in large numbers for the London market, as in some parts of Kent. From some facts, which I shall presently mention, I am inclined to think that the pest may have been imported into this country, as well as into the United States, from the Continent.

Miss Ormerod, so well known for her researches and observations respecting insects injurious to farmers and gardeners, published an interesting article upon the pear-midge in her

'Report of Observations of Injurious Insects' for 1884, which, so far as I know,* is the first recorded notice of the insect in this country. I shall take the liberty of quoting one or two passages from her paper, as they are of peculiar interest. Miss Ormerod says:—"On June 15th I was favoured by Lord Walsingham with specimens illustrative of injury to young pears, caused by the maggots of a kind of small fly or gnat-midge." The small abortive pears were gathered on one of Lord Walsingham's farms in Norfolk. "The inside of these pears was then in process of being eaten away by the small white legless maggots within, and information was sent accompanying that every pear on the trees from which the samples of injury were taken was infested by them." There is no mention of which kind or sort these pears were, but the next extract which I shall make will give some interesting information upon this point. Miss Ormerod goes on to say:—"A little earlier in the year (on June 4th) an account of a similar attack, also not previously observed, was sent to me from Llanina, New Quay, South Wales, by Mr. C. R. Longcroft, who wrote as follows:—"I have sent you some specimens of Marie Louise pears, of which there was a splendid promise of a crop on two trees, but they are all attacked by grubs within. If you cut one open you will see the culprits. The same thing happened last year, causing the destruction of a crop, as well as in addition having destroyed a fine crop of Beaune Bachelier. I observe that the winter pears have entirely escaped. I have not heard of a similar case in this neighbourhood, and during my previous experience of many years I never met with or heard of their appearance here.'" Miss Ormerod gives a graphic account of the life-history of the fly, similar to that published by Kollar, and names it, as he had done, the *C. nigra* of Meigen.

Another observer to whom we are much indebted, and who has enabled us to clear up the life-history of the pear-midge in England and to determine its name; is the Rev. E. N. Bloomfield, of Guestling, near Hastings. He writes me word:—"I have observed for some years past that many of my Marie Louise pears were blighted, and opening them found the cause to be yellowish larvæ. As I was writing to Mr. E. A. Fitch in June, 1885, I enclosed a few pears, asking him what the larvæ were. He

* Edward Newman sent me affected pears, received from Henry Reeks of Tinuxton, in the spring of 1874 or 1875 (see Entom. viii. 167, 189).—E. A. F.

answered at once, 'The fallen pears are attacked by one of the gall-gnats *Cecidomyia nigra*, Mg., restricted genus uncertain.' How many years I had noticed it before this I do not know. I do not remember having observed the pest on any other pear until last year, but as my attention was then especially directed to this point I found other pears were also affected, but not to the same extent by any means. I may say, however, that the affected pears are much more conspicuous on the Marie Louise than on the other kinds. I am told that the pest occurs in the adjoining parish of Fairlight." "The Marie Louise is a Belgian pear, but has been general in this country for at least fifty years." Although these data do not prove that the pest has been imported into England from France or Belgium, yet the facts that these foreign pears have been the ones first and chiefly affected, and that the insect was apparently unknown in England before the last few years, make a *prima facie* case in support of this opinion.

Though the pears in England and America seem to have been blighted in exactly a similar manner, and, in consequence of Dr. Riley's suspicions that the insect had been imported from Europe, it was almost certain that it must be specifically the same in both countries; yet entomologists felt anxious to prove this by breeding the fly here, from the larvæ in pears, in the same way as Dr. Riley had done in America; and I am happy to say that Mr. Bloomfield has enabled us to succeed. He forwarded some of the affected Marie Louise pears to Mr. Inchbald (so well known for his researches on the *Cecidomyiidae*, and skill in rearing them from the larvæ) in June, 1886, but as that naturalist has recorded in the 'Entomologist' for February, 1887, he did not then succeed in rearing any imagines from the larvæ. In June, 1887, Mr. Bloomfield again sent some more pears (full of larvæ) to Mr. Inchbald, as well as to Miss Ormerod, Mr. Fitch, and myself, and both Mr. Inchbald and I have had the satisfaction of rearing both males and females of the *Diplosis*, which I have no doubt is identical with the *D. pyrivora* of Riley. Mr. Inchbald has bred the gnats in great numbers, and has been enabled to supply many of his friends with specimens. With both Mr. Inchbald and myself the females have been more numerous than the males, in proportion of about two to one. In America Dr. Riley found that the imagines began to emerge from

their pupa-cases very early in the year, long before the spring commenced: three specimens made their appearance with him on January 9th, then single individuals came, with intervals of two or three days between each, until the beginning of April, when (on the 10th) thirteen emerged in one day. With myself I found a single female (in the wide-mouthed bottle in which I had placed some of the maggots in the previous June, with some baked earth at the bottom) on February 25th (1888), a second appeared on March 2nd, a third on March 4th, and another both on the 5th and 9th. All these were females, but two males came by themselves on March 12th. With Mr. Inchbald both sexes seem to have arrived together, or nearly so, the first which appeared being, I believe, a male, which he kindly sent to me, and with which I was much pleased, as I had not then seen that sex. It was truly a beautiful little creature. His success in rearing specimens of the pear-midge this year has been wonderful, for he wrote me word on March 19th that he had bred between 200 and 300.

As with Dr. Riley in America so in England, some small parasites have appeared together with the gall-gnats. I sent two of them to Mr. E. A. Fitch, who said that they were both female *Platygastridæ*, general parasites on the *Cecidomyiidæ*, very numerous in species, and difficult to name. Most probably those bred by Dr. Riley and myself are identical.

It may seem a work of supererogation to describe the *Diplosis pyrivora* again after Dr. Riley's full and accurate diagnosis, but as his account is published in a volume of American State Reports, not generally accessible either in England or on the Continent, I think it better to append a short description of the characteristic features of the insect, premising that my definition will be taken from the recent insect itself, and not copied from that of Dr. Riley.

DIPLOSIS PYRIVORA, Riley.

Cecidomyia nigra ?, Meig.

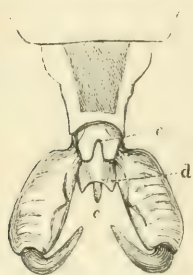
pyricola ?, Nördl.

Nigro-cinerea, crinibus pallidis hirsuta. Thorax antice vittis tribus latis nigris notatus, et ordinibus pilorum subflavidorum lineatus. Antennæ in ♂ moniliformes 26- (2+24) articulatae, in ♀ 14- (2+12) articulatae, articulo 3tio elongato. Abdomen

nigrescens, tenuiter pallido-cinctutum. Halteres albi. Alæ cinereæ, hirtæ, marginibus longe ciliatis, venisque longitudinalibus tertiis abrupte angulatis. Pedes elongati fusci pallide pilosuli. ♀ oviducto prælongo. Long. ♂ circiter 2, ♀ 3, mm.

♂ & ♀. Head black; face and occiput with grey reflexions, the latter furnished with a dense patch of yellow hairs of uneven lengths, the longer of which curve forward over the forehead and eyes; palpi brownish yellow; antennæ in ♂ about one-fifth longer than all the rest of the insect; yellowish brown, consisting of 2 sessile basal joints, and 24 round pedicelled and verticillated ones; the little globular beads of which they consist are divided from each other by pedicels, which are about the same length as the joints at first, but get gradually slightly longer, as the joints get rather less, towards the end. In the ♀ the antennæ are about two-thirds of the length of the insect without the oviduct; they consist of 2 basal joints similar to those of the ♂, and of 12 small oblong or cylindrical ones connected by very short pedicels. The third (the first from the base) is nearly twice as long as any of the others, and looks as if two joints had been cemented together. The joints are verticillated as in the ♂, but the hairs are shorter and pale in colour, while those in the ♂ are dark. Thorax black, with grey reflexions; when viewed from before, the hind part looks ash-grey, while the front portion appears divided into three wide black stripes or patches, of which the middle is triangular in shape, with a broad base in front, and tapering to a point behind where it joins the scutellum. The lateral stripes are subquadrate, and cover the whole of the sides in front, but become indistinct behind. These patches are separated from each other by two rows of bright long yellow hairs, which extend from the scutellum and diverge from each other as they stretch forwards, enclosing the central triangular black stripe. In some specimens these hairs seem to be seated upon grey lines. When viewed from behind, the whole thorax looks grey, and the black patches are indistinct, or sometimes appear like grey patches divided by black lines. A long tuft of yellow hairs is placed on each side of the thorax, above and in front of the root of the wings, from which a few hairs are continued in a thin line along the sides above the wings to the scutellum. A smaller tuft is also placed below the root of each wing, and the front margin of the thorax is covered with short yellowish hairs. Scutellum

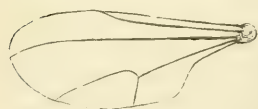
grey, clothed with yellow hairs, which are longest on the sides. Abdomen dark brown, clothed with long whitish hairs, which are seated both on the middle and on the edges of the segments, but are longer and thicker in the latter situation. The hinder margins of the wings in freshly-hatched specimens (especially among the females) are also marked with a pale line. The organs at the extremity of the male abdomen are very complicated, and though the variation of these parts is of great importance in the determination of species; they are very difficult to describe without the aid of figures. I have, therefore,



Male organ of
Diplosis pyrivora.

inserted a cut, taken from Dr. Riley's work, the accuracy of which I have verified. They consist of a pair of forceps or claspers furnished with movable hooks, and of a central style provided with several peculiar-shaped processes at its base, which are thus described and named by Dr. Riley:—"The style (c) is a pointed process, reaching when at rest not quite to half the length of the swollen basal joint of the claspers, and broadening basally; a supra-penal piece (d)

is crescent-shaped, the ears of the crescent reaching about as far as the tip of the style, and its base broadening; still above this is a V-shaped palpigerous piece (e) broad terminally, with a well-marked V-shaped medial slit, and with a simple palpus and a stiff hair on either side." The oviduct in the ♀ consists of three joints, which when fully exerted are longer than the rest of the body of the insect. The first joint is very short and black, and the only one visible when the organ is retracted; the second joint is pale yellowish brown, and about two-thirds of the length of the abdomen; the third is about as long as the second, very thin-pointed and very pale, so as to be almost invisible to the naked eye. Halteres with yellowish stalks and clear white knobs.



Wings dusky, clothed and deeply fringed on the hind margins with black hairs. The second longitudinal or cubital vein runs nearly straight until near the end, when it curves downwards, and reaches the margin

a little behind the point of the wing. The third longitudinal or anal vein runs in quite a straight direction to the point at

which it gives off its descending branch, which turns down at almost a right angle, and runs in a straight line to the border; after emitting this branch the anal vein turns abruptly a little upwards, and then forwards and downwards, and is continued in nearly a straight course to the margin, which it reaches at a point nearly equidistant between the end of its lower branch and the end of the cubital (see fig.). Legs brown, clothed with white hairs, which are more dense on their under surfaces, and more numerous on the femora and tibiæ than on the tarsi; the tibiæ look quite pale in certain aspects, while the knees and tarsi look dark.

In conclusion, I must make a few remarks respecting the larva of this *Diplosis*. Like other Cecid. larvæ, it has 14 joints or segments (those of most insects have only 13), the supernumerary joint being placed between the head and the first thoracic segment. The sternum (*spatula sternalis*, Mik; anchor-shaped process, Ormerod), a horny body, which seems to be peculiar to the larvæ of this family, is placed on the under side of the body, near the junction of the first thoracic segment, with the supernumerary one. It is a more or less elongated process, with a widened head, which varies in shape in different species. The head is free, and projects forward; while the posterior end or root is fixed, and partly concealed beneath the semitransparent skin of the first segment. The larva of *D. pyrivora*, being of a whitish yellow colour, this process can be easily seen, for it is bright pink. As the form of this organ is of diagnostic importance, I have appended a figure, showing its shape and position. The fore part of the larva has been elongated by pressure under the microscope, and therefore looks too tapering.

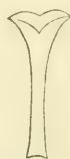


Fig. showing sternal process on under side of larva of *Diplosis pyrivora*.

VARIETIES OF RHOPALOCERA NEAR DOVER.

BY SYDNEY WEBB.

CERTAIN localities appear to be more favourable than others to development of aberrations among the Lepidoptera, but probably there is no district, excepting that lying between the points occupied by the towns of Folkestone and Deal, where an entomologist can purposely make an excursion after varieties with every prospect of success. It may therefore perhaps interest the readers of the 'Entomologist' if I give a list of the principal specimens which have been brought under my notice during the last collecting-season (1887), condensing the descriptions as much as possible, it being borne in mind that the facies of each insect is normal in ground colour or markings excepting when otherwise stated.

Euchloë cardamines.—One male example in which the usual orange tips are replaced by clear yellow.

Argynnis aglaia.—Markings of upper wings prolonged to the centre of the disc, thus forming an irregular black band.

Vanessa urticæ.—One specimen with blue lunules of the hind margins elongated in the direction of the bases. This variety, although a slight one in itself, is very striking to the eye.

Melanargia galatea.—These insects, usually so stereotyped in appearance, varied more than usual. In 1883, its last year of variation here, the marginal line of pale spots were often wanting, but in no instance did this occur last year. On the contrary, specimens with the two posterior discal blotches of the primaries broken up into lines occurred in each of these years, as well as individuals in which the markings of the hind wings made uniform bands. One example had the hind wings uniformly black. One had the fore wings shaped like *Gonopteryx rhamni*, and this grotesque appearance also obtained in an autumnal *Lycæna bellargus*.

Epinephele ianira. — The usual (so-called) sun-bleached specimens of course occurred. One male with an alar expanse of one inch and a quarter only. *E. hyperanthus* was unusually scarce, owing probably to the stormy weather at the time they should have been seen on the wing. No variety *arcte* this year.

Cænonympha pamphilus.—None of the pale variety this year,

but many with blotches of paler colour on the disc of the wings.

Polyommatus phlæas.—One with the coppery scaling broken up by orange markings. One with copper band of hind wings obsolete. One golden-hued.

Lycæna ægon.—Three very pale specimens, the male almost mauve in colour, the females light brown. One female with tips of all the wings bleached; pretty. Many females striated with male colouring, and several gynandrous specimens. The male *ægon* represented by pure deep blue, violet-blue, pure violet and pure light blue examples; of these we consider the violet-blue our type. The Dover type has not the hind margin so broadly dusky as the New Forest specimens. *L. astrarche*.—This, the least given to vary of our British *Lycænidae*, was represented by two good underside examples. One with the discoidal spot alone unobliterated upon the primaries and three spots only on the hind wings. The other (a very prettily coloured specimen) normal on the upper but without ocelli on the lower wings. *L. icarus*.—One male with the whole disc minutely speckled with black scales. One hermaphrodite. One large, very pale-coloured, subdiaphanous male. Several with entirely smoky fringes to all the wings. *L. bellargus*.—Several very blue examples, and some of an intense blue. Two male and two female specimens similar to the form captured by Mr. Sabine (Entom. xx. 40). One extraordinary male with one-third of the wings nearest the base of the natural colour, then shading off into sooty black. Several males with one or all of the wings thickly irrorated with black scales. Four males of a very abnormal colouring, pure French grey in hue (the wings almost appear to have been powdered over with slate-pencil dust), quite distinct from Mr. Sabine's variety. It is probable that want of power has something to do with this, as three of the specimens show wings torn in escaping from the chrysalis. One male with the marginal orange lunules of the lower side indistinctly visible from above also. One with hind margins of all wings shading off into dusky white. Variety *ceronus* of the female, so common in the vernal brood the preceding year at Dover, was not seen at all. *L. minimus*.—Under sides without ocelli. *L. corydon*.—The blue females of this species were also absent. Males went to opposite extremes; in some the fuscous border was very broad, forming a

V to the central spot; in other specimens it was absent, or rather replaced by white, in which the interlinear black spots usually lost in the border, showed conspicuously. Aberrations in which the ocelli were absent were very common, one collector taking upwards of two hundred, but these, as well as the hind varieties, are too well known to merit particular description. As usual, they occurred in their respective localities, those of *L. corydon* at Dover, and those of *L. bellargus* at Folkestone. Dwarfs of *L. corydon* were common near Cornhill Coastguard Station, where they occur perennially. Before leaving the "blues" I must notice an occasional aberration of almost annual occurrence with us, generally affecting *corydon* and *bellargus* in female specimens; this appears to be a defect in the mature scaling of the wings, which causes the insects affected to look shining, almost as though they had been dipped in oil. Many of both species were affected thus in 1887, and I have heard of male *bellargus* taken on the wing, that almost looked as though they had escaped from the laboratory of a variety-maker. *Nemeobius lucina*.—I can only describe a beautiful variety of this insect by transposing the guide-books: ground colour dark brown with tawny tessaræ must read, pale tawny with inner third of wing dark brown, *no* central double-arched fascia, but the usual sub-terminal irregular band is coterminous with a similar one on the entirely tawny-coloured hind wings. All the veins dark brown. A very striking golden-hued specimen.

In conclusion, a few words on the weather at Dover. The winter of 1886—87 was, as we all know, a very long and tedious one, but we did not have here the heavy snow-storms experienced in other localities. A peculiarly long dry summer broke up rather earlier than usual, with much rain the end of August, throughout September and October. There was nothing then to influence (so far as we know) the early broods of *Lycæna icarus* and *L. bellargus*, or to render *L. ægon* and *L. corydon* different from the insects of the year before; nor did we find them, *per se*, to vary more; but the same rule did not apply with the autumnal broods. The heat during larval growth we presume caused the imagines not to reach their full size, and possibly to pupate earlier and nearer the surface than usual, for far more change thus than spin up, and the variations of temperature and weather at the time of emergence had probably something, we do

not know much, to do with the paucity of perfect insects, and with their corresponding increase of variation.

I have given only an account of the *Diurni*, but many of the moths that fell to our nets showed also more divergence in the autumn from the usual forms than in the spring examples.

Maidstone House, Dover, March 13th, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

BY J. W. TUTT, F.E.S.

(Continued from p. 102.)

Leucania, Och., *vitellina*, Hb.

Hübner's type of this species (fig. 379) is a small, very strongly-marked male, of a bright yellow ground colour, marbled with reddish, with transverse lines and stigmata red; his fig. 589 being a female, larger, dull unicolorous orange, with the transverse markings and stigmata indistinct. The specimens I have are all females as large as Hübner's fig. 589, but intermediate in depth of markings and colour between his figs. 379 and 589. Guenée, in his '*Noctuelles*,' p. 73, says:—"It varies in ground colour from a pale yellow to a strong yellowish red, and the markings are more or less clearly marked, following the intensity of the ground colour. I have specimens from Algeria which do not differ from French examples." A good many specimens occur in British collections, but nearly, if not all, must be foreign, for the insect is a southern one, and but rarely occurs even in the north of France and Germany.

Leucania, Och., *turca*, L.

Until very recently I was of opinion that this species was a most constant one in colour. Thanks to the Rev. G. H. Raynor, of Brentwood, I find the species has several shades of colour. Taking the ordinary red forms as typical (the Linnean description is:—"Spirilinguis cristata, alis cinereo-rufis; strigis duabus fuscis lunulaque alba. Alæ superiores absque stigmatibus ordinariis, sed in medio lunula alba minuta."—"Systema Naturæ," p. 847, No. 140.) we find some specimens with a distinctly

orange or yellow tint; others of a dull, dead, coppery colour, much suffused with black scales, and with the dark transverse lines showing a tendency to become obsolete; in fact, the distinctness of these lines is inversely proportional to the depth of the ground colour, the pale specimens (*lutescens*) have the lines very distinct, the darker ones obscure. I am indebted to Mr. Dobrée for the following interesting information:—"Siberian specimens show the same variations of light and dark colour, but some of the former strongly incline to grey, and in others the small dark shade which surrounds the white spot in our English specimens, is developed into a large and conspicuous cloud of dark grey. To this form Dr. Staudinger gives the name of *grandis* in his last catalogues."

α. var. lutescens, mihi.—The ground colour of the anterior wings of a brighter and more yellowish tint than in the type, and but sparingly sprinkled with darker scales, the transverse lines very distinct, and the fringe of a pale shining yellowish-red colour, agreeing with the ground colour of the wings. The posterior wings much paler than in the type, with a darker shade in the centre. These pale forms occur very sparingly with the type. I have them from the New Forest, Brentwood, &c.

β. var. obscura, mihi.—The anterior wings of an obscure smoky-grey colour, with a dull coppery tinge, much suffused with dark scales. The white spot in the centre very indistinct, and the transverse lines much blurred. The Rev. G. H. Raynor has in his collection a fine series of graduated forms of this variety.

γ. var. grandis, Btl.—"The small dark shade which surrounds the white spot in English specimens is in some Siberian specimens developed into a large and conspicuous cloud of dark grey. Such varieties form the *grandis* of Staudinger's last catalogues, by whom it is treated as a distinct species" (Dobrée, *in litt.*). The Rev. G. H. Raynor has a variety in his collection, captured at Brentwood, with this grey shade very distinctly developed.

Leucania, Och., *lithargyria*, Esp.

This species varies much in ground colour, and its varieties are difficult to deal with on account of the difference existing between our specimens and Continental ones, and the fact that Haworth considered the different shades of the species sexual, the pale ones being males, the dark red ones females, whereas

both forms occur in both sexes. The typical Continental *lithargyria* is an intermediate pale greyish-red form, which is figured by Hübner (fig. 225). This form is Haworth's *grisea*. Our palest form (without red) is, in its most extreme form, var. *argyritis* of the Rambur Catalogue: our reddest forms are the *ferrago* of Fabricius (217). The transverse markings, too, vary a great deal. Some specimens have only a row of dots parallel to the hind margin, with no other marks. Haworth says, "Alæ fere unicolores." Some have a transverse basal line, and some even two or indications of them, between the reniform and base of the wings; whilst others have, in addition, a transverse line between the reniform and the row of dots, but this latter form is very rarely met with. Mr. Lawson, of Perth, sent me some with all these lines indicated, but the only specimen I have with a distinct and complete basal line and a distinct and complete line between the reniform and the row of dots was captured by Mr. Ovenden near Strood. Mr. Dobrée writes me:—"In some of the specimens taken here (Beverley, E. Yorkshire) the tendency to a darker shade on the hind margin of the upper wings is very pronounced."

α. var. argyritis, Rbr. Cat.—The anterior wings of this variety are pale grey, without the reddish colour of the type; the posterior wings paler than the type, with a row of black dots on the nervures, these dots being continuous with those on the anterior wings. This variety is described by Dr. Staudinger as "Alæ anteriores pallidiores, alæ posteriores punctorum linea exteriore." Staudinger gives as localities Sicily, France, Syria, and Dalmatia. This is undoubtedly the var. *α* of Guenée's 'Noctuelles,' vol. v., p. 75. His description is, "Of a greyish tint. Inferior wings whitish, with a row of dots more or less visible on the disc." Mr. Dobrée writes me, "It is almost light wainscot, and our English specimens are never so light coloured."

β. var. ferrago, Fab.—This is our ordinary reddish type, with the anterior wings of a deep ferruginous-red colour, with more or less traces of one (or two) basal transverse lines between the reniform and the base of the wings, and a row of dots parallel to the hind margin, a dark lunular mark sometimes being just within the base of the row of dots. The posterior wings of a dark grey, occasionally with traces of a row of dots on the disc.

This is the female of Haworth's *grisea*, of which he says, "*Alis feminae rufis.*" A very large proportion of our specimens are red; the finest specimens perhaps of this form that I have seen are some received from Mr. Lawson, of Perth.

γ. var. *extralineæ*, mihi.—The anterior wings of a ferruginous-red colour, with all the ordinary markings, and in addition a complete transverse line between the reniform and the row of dots parallel to the hind margin. This line is the complete development of the lunular mark mentioned above (vide var. *ferrago*).

Leucania, Och., *unipuncta*, Haw.

A few specimens of this cosmopolitan species have been recorded as taken in Britain at different times, spread over a great number of years. The species undergoes a certain amount of variation, of which I am unable to write much from personal experience. Haworth's description is very distinct:—"Alis rufescentibus seu griseo atomosis, lineola obliqua fusca apicis punctoque minutissimo albo basi stigmatis postici. Stigmata ordinaria fere omnino oblitterata." (Haworth's 'Lepidoptera Britannica,' p. 174, No. 37.) Why this name (*unipuncta*) has been replaced, by some authors, by Guenée's *extranea* I cannot imagine, considering that Haworth's name is prior by more than half a century. The description of Guenée's *extranea* is almost identical with that of Haworth's, but in addition the former author lays more stress on his specimens being more strongly powdered with black scales. Guenée writes of *extranea*:—"The superior wings very acute at the apex, of a grey colour, more or less reddish, sometimes whitish, strongly powdered with black scales. The two ordinary stigmata stand out in the discoidal cellule in a light, more or less reddish, colour. Under the reniform is a white spot, lightly surrounded with black. No traces of transverse lines occur, but the series of black dots which represents the usual angulated line beyond the reniform is often very distinct; an oblique black streak starting from this line and carried almost to the apex, together with the shape of the wings, form the principal characteristics of this species. The inferior wings slightly transparent, grey, with the outer margin and the nervures blackish." (Guenée's 'Noctuelles,' vol. v., pp. 77, 78.) Mr. Dobrée writes me, "Specimens which I have from South Australia agree with Guenée's type, but are decidedly

greyer and more coarsely powdered with black atoms than my specimens from Canada, but as Guenée's var. B, which are less powdered, are from Australia, probably they vary there too." Taking Haworth's less powdered specimens as the type, the following varieties have been noticed:—

α. var. extranea, Gn.—Described in full above; more thickly powdered with black scales than the type. The Rev. G. H. Raynor has brought the following description to my notice:—"Fore wings light brownish-ochreous, with numerous scattered short fuscous strigulae and black scales; orbicular and reniform indistinct, roundish, more yellow-ochreous, dark-centred; a white dot, sometimes very obscure, on lower margin of reniform, preceded and followed by dark scales; a curved posterior series of black dots; a straight oblique slender fuscous streak from apex to this series; a hind-marginal series of black dots; cilia pale brownish-ochreous, apex whitish. Hind wings grey-whitish, towards hind margin broadly suffused with dark grey, especially on upper half, veins dark grey; cilia whitish, sometimes with an indistinct grey line." ('Transactions of the New Zealand Institute,' vol. xix., 1886, by E. Meyrick, B.A., F.E.S.)

β. var. asticta, mihi.—This is Guenée's var. A, of which he says, "No white spot at the base of the reniform." This name would also include Guenée's var. B, of which he says, "No white spot; superior wings less powdered, with the apical streak less marked. Inferior wings with a blackish border clearly marked, especially underneath." So that his var. A is the variety *extranea* without the white spot; var B is the paler type without the white spot.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

CÆNONYMPHA PAMPHILUS WITH ADDITIONAL OCELLI — Mr. Larkin describes a specimen of *Cænonympha pamphilus* (Entom. 110) in which "each of the ocelli on the under surface of the wings has a supplementary spot below it and attached to it." I apprehend this applies to the ocelli of the upper wings only. I have a specimen in which there are two confluent ocelli, each white-centered, on the under side of the left upper wing the

right possessing but one ocellus. I have also several specimens with six ocelli on the under side of each lower wing, four of the six on each side being white-centred. — J. JENNER WEIR, Chirbury, Beckenham.

NYSSIA ZONARIA TWO YEARS IN THE PUPA.—My experience in breeding this insect shows that it frequently stays two years in the chrysalis. From larvæ I had in the summer of 1886 I obtained imagines in 1887, the first emergence being on March 29th. On examining the remaining pupæ in the autumn, I found them perfectly healthy. These are producing imagines now (1888), the first emergence being on March 22nd. The larvæ of 1886 were my last, as I had followed out the insect's history, and, besides, it was absent then in very few collections. The moth occurs at intervals only along the west coast, from Southport in Lancashire to the Conway Marshes on the borders of Carnarvonshire. Like its colleague, *N. hispidaria*, it is one of our earliest insects, occurring in March and April, and not in September as stated in Newman's well-known work. The caterpillar pupates in sandy soil, and feeds on trefoil, willow, and —I am indebted to Mr. R. Ivy, of Southport, for the following (see Entom. for June, 1886)—on knapweed (*Centaurea nigra*), certainly not on yarrow.—J. ARKLE; 2, George Street, Chester.

[Probably the larva of *N. zonaria* may not eat yarrow from choice; but in 1885 I had a small batch of ova of this species; the larvæ resulting therefrom were, in my ignorance of a more suitable pabulum, supplied with yarrow. Several attained the pupal stage, and there their history ceased.—R. S.]

SUCCESSFUL SUGARING AFTER RAIN.—I have found throughout the past season that invariably after a wet or showery day moths have been abundant at sugar; although during the long drought, night after night, I took nothing. I suppose when the flowers are too full of moisture for moths to extract the honey they turn to artificial sweets. I should be glad to hear if other collectors' experience coincides with mine.—MINNIE KIMBER; Cope Hall, near Newbury.

PIMPLA SCANICA HYPERPARASITIC.—*Pimpla scanica* as a hyperparasite is, I think, worth recording. I must candidly say that if I were not positively assured of the correctness of my observations I should be one of the last to make the assertion. The history of the affair is as follows:—In June, 1887, I was

collecting in the woods near Bickleigh, and in my rambles saw several pupæ of *Limneria vulgaris* on the leaves of *Rhamnus frangula*, evidently from *Gonopteryx rhamni*, for the larva-skin of the unfortunate caterpillar was used, as usual, as an outside covering. I boxed about a dozen, brought them home, and allowed them to remain in the same glass-bottomed box. As the *Limneria* emerged I took them out, until one only remained; and on the 20th July I bred from this last pupa, to my astonishment, *Pimpla scanica*. My curiosity was so raised over this that I cut open the cocoon, which on examination proved to contain the mortal remains of the perfect fly of *Limneria vulgaris*. The pupa-case and contents I have sent to Mr. Fitch, who may have something to say on this most interesting matter. Mr. Bridgman, who has seen both fly and pupa, believes that none of the genus *Pimpla* has ever been bred before as a hyperparasite. — G. C. BIGNELL; 7, Clarence Place, Stonehouse, Devon, Feb. 25, 1888.

[From an examination of the remains I think there is no doubt but that the *Pimpla* was bred from the very characteristic cocoon of *Limneria vulgaris*. This observation, however, is not unprecedented, as Brischke has already recorded the breeding of *Pimpla scanica* from a small *Campoplex* cocoon; he has also noted the hyperparasitism of another Pimplid, *Theronia flavicans* on *Limneria tricolor* (Entomologische monats-blatter, i. 159). Another remarkable observation made by Brischke is the hyperparasitism of two species of *Cryptus*, viz., *C. nubeculatus*, bred from an *Eretastes* cocoon, and *C. titillator*, from *Campoplex pugillator*. (Deutsche Ent. Zeit. xxi. 286). The supposed phytophagous habits of *Pimpla* have already been referred to, and these noteworthy exceptions to the general unity of habit in a genus is certainly most interesting.—E. A. F.]

ERRATA.—In my notes in April number, p. 107, line 13 from top, for "Witherstock" read "Witherslack"; line 4 from foot, for "*rosæcolana*" read "*roseticolana*."—J. B. HODGKINSON.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — April 4th, 1888. Dr. D. Sharp, F.L.S., President, in the chair. The Rev. J. H. Hodson, B.A., of Torquay; Mr. A. J. Croker, of New Cross, S.E.; Mr. G. C. Griffith, of Cotham, Bristol; and Mr.

Albert H. Jones, of Eltham, were elected Fellows. Mr. H. Goss exhibited a large number of insects lately received from Baron Ferdinand von Mueller, K.C.M.G., F.R.S., of Melbourne, which had been collected by Mr. Sayer on Mount Obree and the adjoining ranges in New Guinea, during Mr. Cuthbertson's recent expedition there under the direction of the Royal Geographical Society of Australia. The collection comprised about 240 species of Coleoptera, 150 species of Lepidoptera, 48 species of Hemiptera, and a few species of Diptera, Hymenoptera, and Orthoptera. The Lepidoptera included twenty species of butterflies belonging to the genera *Calliplea*, *Chanapa*, *Hamadryas*, *Melanitis*, *Mycalesis*, *Hypocysta*, *Tenaris*, *Hypolimnias*, *Cyrestis*, *Neptis*, *Acræa*, *Danis*, *Pithecops*, *Appias*, *Ornithoptera*, and *Euryeus*. Mr. Osbert Salvin, F.R.S., exhibited, and made remarks on, about sixty specimens—no two of which were alike—of a species of butterfly belonging to the genus *Hypolimnias*, all of which had been caught by Mr. Woodford near Suva, Viti Levu, Fiji, on one patch of Zinnias. Mr. H. T. Stainton, F.R.S., exhibited, on behalf of Mr. G. C. Bignell, cases of *Thyridopteryx ephemeræformis*, Haworth, collected near Charleston, U.S.A. Mr. Stainton said he hoped Mr. Bignell would not introduce this pest into England. Mr. W. F. Kirby exhibited, and read notes on, about twenty species of South African dragonflies lately received from Mr. Roland Trimen, F.R.S., of Cape Town. Mr. A. Sich exhibited a bred specimen of a variety of *Plusia gamma*. Mr. Goss read a letter from Mr. Bignell, correcting a statement made by Mr. Poulton at the March meeting of the Society to the effect that the variety *valesina* of the female of *Argynnis paphia* did not occur in Devonshire. Mr. Bignell said that the var. *valesina* was included in Mr. Reading's 'Catalogue of Devonshire Lepidoptera,' and that he had himself taken specimens of this variety in Bickleigh Vale, Devon. Mr. Waterhouse read a paper entitled "Additional Observations on the Tea-bugs (*Helopeltis*) of Java," and exhibited a number of specimens of these insects. He said that the species infesting the Cinchona in Java was supposed to have been introduced from Ceylon in tea, but that he had discovered that the species on the Tea and on Cinchona in Java were distinct, and that both species were distinct from *Helopeltis Antonii* of Ceylon. Herr Jacoby read a paper entitled "New,

or little-known, species of Phytophagous Coleoptera from Africa and Madagascar." A letter was read from Mr. E. C. Cotes, of the Indian Museum, Calcutta, asking for the assistance of British Entomologists in working out certain groups of Coleoptera, Neuroptera, Orthoptera, Diptera, and Hymenoptera in the Indian Museum. A discussion ensued, in which Mr. M'Lachlan, Dr. Sharp, Mr. Waterhouse, Herr Jacoby, and Mr. Distant took part.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 22nd, 1888.* T. R. Billups, F.E.S., President, in the chair. Messrs. E. Knight, C. J. Montague, J. E. Lloyd, W. Roots, and R. Pierpoint, were elected members. Mr. R. South exhibited a specimen of *Polyommatus phleas* with ocellus on under surface of left hind wing similar in character to the marginal ocelli on the under surface of anterior wings, and an example of *Papilio bianor* with a patch of the colour and ornamentation proper to the under surface of hind wings on the under surface of the right fore wing. The *Polyommatus* was captured by Mr. South in N. Devon in 1881, and the *Papilio* by Mr. Leach's collector in China in 1887. Mr. Tutt, specimens of *Leucania impudens* taken by Mr. W. Farren, of Cambs.; one closely resembling Hübner's grey type; one the var. *striata* of Staudinger; one resembling Hübner's figure of *pudorina*; the others being intermediate forms. Mr. White, preserved larvæ, also imagines, of the genus *Acronycta*, for the purpose of exhibiting the difference of character in the larvæ and the close resemblance of the moths, which he stated was so strong in the well-known instance of *A. tridens* and *A. psi*. Mr. White said he should be pleased to receive ova of any species of this genus, for the purpose of studying the affinity of the group; it would be interesting to ascertain if the larvæ varied in the different stages, and whether there was a much closer resemblance in the final stage. Mr. South remarked that in the earlier stages the larva of *A. psi* could not be separated from the larva of *A. tridens*. Mr. J. Jenner Weir exhibited British and Continental specimens of *Euchloë cardamines*, and remarked that he had observed for some years a difference between the latter, so far as he had been able to examine them, and those captured by himself in Kent, Surrey, Sussex, and Hants; those captured in these counties had the orange spot on the upper wings reaching but slightly

beyond the discoidal black spot, the inner edge curving outwards and not extending beyond the first median nervule, thus leaving the hinder angle white; this disposition of marking he found perfectly constant in those captured. In the Continental specimens the orange spot extended considerably beyond the discoidal spot and was continued to the inner edge of the wing, causing the hinder angle to be orange. The distinction pointed out was very small, but if it were constant our *E. cardamines* was an insular variety, easily separable from Continental specimens. Mr. Tutt read a paper on "The Morphology and Physiology of an Insect," which was followed by a discussion.

April 12th, 1888.—The President in the chair. Mr. Slater exhibited a large *Bombyx* from Zulu Land, which he said approached nearest to *Bombyx oubie* taken by M. Guerin in South Abyssinia, and might be a local variety of that insect; if not, it was a new species. Mr. J. Lea, varieties of *Taniocampa munda*, light specimens without the twin black spots.* Mr. Henderson, forms of *Satyrus semele*, *Cucullia verbasci*, from various localities, with a view of illustrating the local variation of the species. Mr. Adkin, bred specimens of *Pygæra anachoreta*, from Saltwood. Mr. Carrington thought that the species was no doubt introduced into this country with the balsam poplar, and gave many instances which he had met with of various species being introduced by the importation of plants. Mr. Tugwell, grey and black forms of both sexes of *Nyssia hispidaria*, which he stated were all bred from one batch of eggs; there was, however, very little variation in the larvæ. Mr. J. Jenner Weir, specimens of *Pieris brassicæ* from St. Petersburg, lat. 60°; Lewes and Blackheath, lat. 50° and 52°; Hyeres, lat. 43°; and remarked that the species did not differ from places so remote either in marking or in size. Mr. T. R. Billups, a living specimen of the genus *Aspidimorpha*, which he said was an apparently new species, and was brought from Upper Burmah amongst the roots of an orchid (*Dendrobium brymerianum*). The Secretary read a note from Mr. T. D. A. Cockerell with reference to an exhibit of a new rose gall from Custer Co., Colorado, which had been pronounced by Mr. L. O. Howard, of the U. S. Department of Agriculture, to be the product of an undescribed species, *Rhodites tuberculator*, specimens of which were contained in the collections of the Department.—H. W. BARKER, Hon. Sec.

* Var. *immaculata*, Staud.—R. S.

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LABELLING INSECTS.

By J. W. TUTT, F.E.S.

As the study of Lepidoptera becomes more extended, and the collector who has taken up the order gets more deeply interested in his subject, he gradually ceases to regard the objects he collects as so many beautiful things to be looked at, and wishes to find out more about them. The cause of variation and range of local forms has of late years created much interest, but there is one thing which has not been systematically practised, in fact has been altogether neglected, by many of the best of our younger lepidopterists. I refer to the habitual labelling of the specimens we place in our collections. There are numbers of lepidopterists who, having a real scientific knowledge of their own collections, can from memory name the collectors who captured the specimens, and the localities whence they were obtained; but the best memory will sometimes be at fault; and such knowledge is only of use to its actual possessor. Others take a step forward, by keeping a written catalogue of their collections, with data and notes entered; but this is liable to be mislaid or destroyed, when much valuable information is thus lost, and the collection, from a scientific point of view, is rendered almost valueless.

When I began collecting, some years ago, two of my first correspondents were the Rev. G. H. Raynor and Mr. W. Warren. Both these gentlemen sent out insects with tiny labels placed on the pin underneath the insect, on which were the place and date of capture, and sometimes other necessary data. One, therefore,

had at once a history with each insect. I used to think these little pieces of paper useless, and wondered what one wanted more than the insect, and systematically—I am ashamed to own—took them off before putting the insects in my cabinet. In time, however, I began to find that a series was not everything, and that a man, to be an entomologist, wanted something more than a fine collection, and that he might be a first-class entomologist, with a miserable collection—in the generally-accepted sense of the word. I soon wished that I had left these labels, and that all my correspondents would follow the example of these gentlemen. However, I began by labelling my own captures and those I received; and since then have gradually cast out of my collection all those specimens about which I knew nothing. I found, however, at the very commencement a most serious difficulty, and the difficulty is greatest with our London lepidopterists. Asking for information, I was treated to courteous explanations as to the ground being private, &c., and leading in every case to the undoubted conclusion that I wanted the knowledge for poaching purposes. This was annoying, but, as I am probably rather pachydermatous, I persevered, and eventually got the desired information; this difficulty vanishing in a short time, the facts being now most courteously given, when there is no doubt about the purpose for which they are required. But still it was a difficulty at first, and one which had to be overcome. I have frequently had pointed out to me that there is real danger in allowing exact localities to be known. Personally, I consider the danger more imaginary than real. In doubtful cases, *i. e.*, where one has an idea that a correspondent will make unfair use of the information, there are two roads open: the first is to refuse point-blank, and tell your correspondent why; the second is to tell an approximate locality, from which, if he is a real student, he may gather the exact geological formation of the district and any local peculiarities, but in this case it is of the utmost necessity not to mislead. North Kent, for instance, is vague; but there are few London lepidopterists who do not know the exact spot North Kent generally means. I must say that I should prefer to refuse point-blank, than adopt the more round-about and probably misleading method.

I should like to insist on the necessity of entomologists who give or exchange insects adding a note, whether the information

is asked for or not, informing the receiver of the locality and date of capture of each insect, thus:—*Acidalia ochrata*, Deal; July, 1887. *Epione paralellaria*, York; July, 1887. In neither case could a bad use be made of the information, as far as I can see. I own that I cannot find time to label every insect I capture. What I do is to place all the insects captured on a certain day together in my store-boxes until the end of the season, placing the locality, or localities, and date under each day's work. I can then readily add to each the locality and date when I send insects away or place them in my cabinet. I find that the use of a label under the insect necessitates the frequent removal of the specimens when one is frequently referring. Such removal, too, does not tend to improve them. Our wretchedly low style of pinning, too, makes this particular method of labelling more difficult. The high style of continental pinning and flat setting allows a label underneath to be read without touching the insect and pin. In Mr. Stainton's unapproachable collection the specimens are raised, by means of tiny pieces of pith on long pins, to the height of continental-set specimens, and attached to each pin is a label with a written history of the insect thereon. I believe there is not a specimen in the whole of Mr. Stainton's immense collection which is not labelled, and the more important data carefully noted. Mr. Stainton is so far away the best living lepidopterist that I consider his practice would alone be a sufficient excuse for bringing the matter forward.

We have, however, to consider, as most English specimens are set low on the pins, what is the best modification for labelling our insects, so that we can refer to them without injury. The method I adopt is to write the data on a tiny piece of paper, and pin it just below and generally on the right-hand side of the insect, so that it is clearly visible without moving the glass of the cabinet drawers. If more than one or a number of insects, taken in the same locality at the same time, should be in the series, a label after the last one of the batch suffices for that particular group. It does not detract much from the beauty of a collection, and there is no doubt about the increase in its utility. It used to be a labour to toil through a fairly large collection with a friend; now I find the data attached to the specimens makes the work infinitely more interesting to everyone who goes through such; and unqualified approval of all scientific lepidopterists shows that

the interest added is tenfold, while the loss in appearance is of so very little consequence.

Another advantage the actual labelling of specimens has over all other indirect methods, is that it makes the collection valuable after it leaves the hands of the collector who formed it. I suppose no one knows more about his own collection than did the late Henry Doubleday about his; yet what is to be learnt from that collection after a certain elementary point has been reached? It is useful as reference to name species, to see the range of variation in certain species, but there is nothing to tell us whether any particular insect came from the North Pole or the Sahara; nothing to help us to draw any conclusions from one of the greatest masses of heterogeneous information on Lepidoptera ever collected together. What a different value the collection would have if some system of labelling had been adopted!

Many collections with the specimens not labelled, but with a good history, as far as the collector is concerned, are sold in the sale-rooms. They increase the series of the buyers by a few more or less of a species than someone else has, but they have not the least scientific value. "Fine variety, cost £2 at So-and-so's sale," is a common speech; and that is the only scientific education the buyer has for his money. How much more valuable would such a collection be if every buyer had labels and data with the specimens he bought. He would have something then for study, something for comparison. Again, when a collection is broken up and the individual series are not labelled, but the collector has a diary, the diary must go to one buyer, or perhaps it is not even heard of; certainly it cannot go to all the buyers; hence it is of little practical value.

I recently went through Mr. South's fine collection, for the first time; and although we had never exchanged any views upon the subject, I thought it pointed a very good moral when I saw that he labels his specimens exactly in the same way that I do.

If this note leads to a discussion, or induces any lepidopterists to adopt a scientific principle in their collections, I shall be more than satisfied.

Rayleigh Villa, Westcombe Park, S.E., May 14, 1888.

DESCRIPTION OF
LARVA OF *MACROMPHALLA RIVULARIS*, BUTLER.

BY W. BARTLETT-CALVERT.

Larva.—Length one and three-quarter inch, of a slaty colour, and covered with fine hair; head of same colour, with a lemon-yellow V-shaped mark in the front, filled in with black; the 2nd segment has wart-like appendages at side of a deep rose colour, and terminate in a bunch of cream-coloured hair. From 2nd segment a double streak, of an ochre-yellow colour bordered with black, runs along the back to anal claspers, and has in the centre of each segment a reddish patch, from the fore part of which protrudes a small tuft of white and black hair, which on the 2nd, 3rd, 4th, and 12th segments are much longer and more bushy than the rest.

From the wart-like appendages on 2nd segment a narrow stripe of a reddish ochre colour runs along the side to anal segment, and on the 3rd and 4th segments, between the lateral and dorsal stripes, are often two creamy patches, but they are not constant. Spiracles black, enclosed in a creamy-coloured spot, with a black dash below, under which dash is again a creamy tuft of hair. Under surface of a dirty white, with a broad reddish ochre-coloured band running from the head to the anus between the prolegs and claspers. Prolegs red, banded with black; claspers steel-blue.

Feeds on espino (*Acacia cavenia*). Full-fed by the end of December, spinning up in a long tapering buff-coloured cocoon on the slender branches. Moths emerge from January to end of February.

Habitat, Chili. Vide 'Transactions of the Entomological Society of London,' 1882, p. 12.

Colegio Ingles, Santiago, Chili.

LEPIDOPTERA IN THE CHANNEL ISLANDS.

BY THE REV. F. A. WALKER, D.D., F.L.S.

IN reference to the article on this subject (Entom. xx. 63), I must take exception to the writer's statement that "the Island of Sark, although under four square miles in area, contains, we were informed, nearly the whole of the insect fauna of Jersey and Guernsey." In company with my father, the late Francis Walker, I spent nearly seven weeks in the Islands in the summer of 1860, also visiting the neighbouring Norman town of St. Malo, during which period we explored the Islands all pretty thoroughly, in the following order:—Guernsey, Sark, Herm, Jethou, Jersey, Alderney.

In the 'Zoologist' for 1864, in "Notes on the Distribution of Insects in the Channel Islands," by my father (pp. 9273-9276), the following passage occurs:—"Jersey has a much more extensive insect fauna than is afforded by all the other Islands." My own experience goes to confirm this statement, as Jersey is at once larger, warmer, and more southerly than any of the rest. Both my father and I preserved journals of the whole of our tour; my father's journal having special reference to the comparative entomology of all the places which we visited, including notes on all orders of insects. Only Arachnidæ are specified in the volume of the 'Zoologist' above mentioned; and, in addition to the insect fauna recorded as personally observed, there is also a MS. catalogue of the Coleoptera, Diptera, Hymenoptera, and Orthoptera in the collection of Mr. Piquet, a well-known entomologist, botanist, and chemist, of St. Helier's.

I subjoin some notes on the Lepidoptera of the Islands, as observed May 26th—July 10th:—

GUERNSEY.—May 28th, at Fermain Bay and Moulin Houet Bay: *Thecla rubi* (abundant), *Polyommatus phlæas*, *Lycæna argiolus*, *Pararge ægeria*, *Bombyx quercus* (2 larvæ). May 30th, Vale Castle: *Vanessa cardui*. June 1st, towards Rocquaine Bay: *Vanessa atalanta*. June 15th, at Petit Bot Bay: *Melitæa cinxia*; singular dark variety of *P. megæra* at La Moie Point, above Le Gouffre, or the "Abyss," named by me *sarniensis*.

SARK.—June 4th, neighbourhood of Dixcart Bay: *Lycæna icarus*, *Euchelia jacobææ*, *Plusia gamma*. June 8th: *Pieris brassicæ*, *P. rapæ*.

HERM.—June 13th and 14th: *Vanessa atalanta*, *V. cardui*, *Pararge megæra*, *P. ægeria*.

JETHOU.—June 14th, grassy mound of an islet, chiefly a rabbit-warren: *Cœnonympha pamphilus*.

JERSEY.—June 22nd, St. Ouen's Bay: *M. cinxia*, *T. rubi*, *Argynnis latona*, and *Macroglossa stellatarum*. June 24th, St. Catherine's Bay: *Zygæna filipendulæ*. June 30th, St. Ouen's Bay: *M. cinxia* (rather worn), *A. latona*. July 4th, Rozel Bay: *Nemeophila russula*. July 5th, St. Ouen's Bay: *A. latona*, *Pieris daplidice*. July 6th, St. Clement's Bay: *Agrotis exclamationis*.

ALDERNEY.—July 7th, Braye Bay: *Pieris brassicæ*. July 9th: *Chærocampa porcellus*, *Deilephila euphorbiæ* (one solitary wing on a common). This last-named species is very common in Jersey, where its food-plant, the sea-spurge, abounds, especially in St. Ouen's Bay.

Epinephele ianira is also labelled in my collection from the Channel Isles, and most probably occurs in all of them.

Thyatira batis and *T. derasa* are likewise recorded, and may have been obtained from a Jersey doctor of St. Saviour's, who, on my way to Mr. Piquet, of St. Ouen's Bay, informed me that he had taken *Parnassius apollo* and *Papilio podalirius* in the island, and that *P. machaon* was common in the autumn. It is most likely that he mistook other species for them, and to the occurrence of these last-named insects I still append a query.

Dun Mallard, Cricklewood, N.W., February 2, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

BY J. W. TUTT, F.E.S.

(Continued from p. 139.)

Leucania, Och., *loreyi*, Dup.

Of the variation in this widely-distributed species, Guenée writes:—"I find no essential difference between our European *loreyi* and those which I have received from M. Horsfield, who bred them in Java. On the other hand, I have a female specimen from Brazil slightly smaller and clearer. It varies in ground colour." ('Noctuelles,' p. 84.)

Leucania, Och., *obsoleta*, Hb.

The type of this species is Hübner's fig. 233, which gives a very incorrect idea of the form we get, and an equally incorrect one of all Continental specimens I have seen. The anterior wings are of a different shape to our *obsoleta*, and it is highly coloured. The row of dots parallel to the hind margin are, however, distinctly marked. My first impression of the figure was that the fore wing represented the var. *punctilinea* of *impura*, but the hind wings are characteristic of *obsoleta*, which cannot be mistaken for those of any other species. Hübner's figure may have been an unusual form, but I have seen no varieties.

Leucania, Och., *putrescens*, Hb.

The types of this species are Hübner's (Geyer's) figs. 730 and 731. These, although presenting the general characteristic markings of *putrescens*, are so small compared with our British form that they are hardly recognisable. I have seen no Continental specimens, but, if Hübner's figures are a fair representation of the species as it occurs on the Continent, our form is well worthy of a distinct name. This would hardly seem to be so from Guenée's remarks, 'Noctuelles,' p. 80, where he writes, "Bad as is the figure of Geyer, I believe decidedly that it really is the type of this species, which it represents, and not, as I at first thought, a variety."

(I have dwelt on Hübner's figures of these two species because they represent the first described or figured types of their respective species.)

Leucania, Och., *impudens*, Hb.

Hübner's fig. 229 (by error 329) is the type of this species, which may be described as follows:—Anterior wings of a pale greyish colour, with no trace of reddish, thickly sprinkled with black dots; a dark but faint longitudinal shade runs just above the inner margin, another between the upper branches of the median nervure, and another near the apex, a black dot at the end of discoidal cell; hind wings very dark grey, no markings whatever. Guenée, comparing the type with *pudorina*, says of

it, "Larger, of a different colour and shape, at the extremity of the discoidal cell a large black dot, which is wanting in *pudorina*." This black dot is, however, nearly always present in *pudorina*; the females are as a rule greyer than the males (Mr. Farren has sent me some almost as grey as Hübner's type-figure); and Mr. Dobrée writes me that "*impudens* from various parts of France and Germany do not differ from English specimens." In this species there is great variation; some specimens are grey (as in the type), some are bright rosy, some are almost unicolorous ochreous; whilst others have the dark shades between the nervures developed to such an extent as to form bright and strongly-marked blackish stripes.

α. var. pudorina, Hb.—Hübner's fig. 401—ochreous, sprinkled with reddish—represents our usual form of the male. It has been treated as distinct by Guenée and all our later British authors. The greater number of specimens from Cambridge, the New Forest, and other British localities are of this form, the very grey form being rare.

β. var. striata, Dobrée, *in litt.*—"The colour of the anterior wings is a very glossy wainscot-brown rather than ochreous, coarsely powdered with black, the wing-rays and the shading, which is faintly perceptible in English specimens, showing out clearly in very dark grey. In size there is no difference. This is a handsome variety from the Amur district, with the colour and markings much intensified." I have never seen this variety, and have to thank Mr. Dobrée, who has specimens in his collection, for the above information. I have, however, a specimen lent me by Mr. W. Farren, of Cambridge, with all the spaces between the nervures as thickly powdered with black scales as possible, the wing-rays being dark grey. I should think this specimen is almost exactly like the Amur specimens.

γ. var. rufescens, mihi.—Ground colour of the anterior wings entirely bright rosy red, no trace of ochreous, with very pale grey wing-rays; the wings only very slightly suffused with black scales, except just above the median nervure, where they form a decidedly blackish longitudinal streak; a small but very distinct black spot at the end of the discoidal cell. Hind wings pale grey, with red fringes. I have again to thank Mr. Farren for the loan of the type of this variety, which is much more extreme than any I had previously seen.

Leucania, Och., comma, L.

The type is described by Linnæus as "*Spirilinguis cristata*, alis cinereis deflexis; lineola nigra adjacente tenuiori albæ. Alæ sordido colore, lineola nigra baseos. Stigmata nulla." ('*Systema Naturæ*,' pp. 850, 851, No. 156.) The essential points are—dirty ash-coloured, with a black lineola touching a slender one of white; no stigmata. Treitschke writes, vol. v., p. 302, "*Alis anticis pallide fuscis*," &c. Hübner, fig. 228 (by error 328), figures the type as *turbida*; his figure is excellent. This species varies much in the depth of ground colour and markings, our British specimens rarely occurring as pale as those from the Continent, although Continental specimens are occasionally dark. Hübner figures this dark form, fig. 617, under the same name, *turbida*, which he applies to the type. It is worthy of remark that my Deal series includes the darkest, and at the same time the palest, British specimens I have ever seen.

Var. *suffusa*, mihi.—The ground colour of the anterior wings of a decided brown colour, much darker than the type; the anterior wings, including the costal area, very much suffused with fuscous scales, the spaces between the wing-rays showing out as distinct, dark, longitudinal, wedge-shaped streaks on the outer margin. The black streak under the base of the pale median nervure intensely black. The hind wings of a deep blackish grey colour. Nearly the whole of my British series belong to this melanic form. The specimens which I have from the London and Deal districts are generally darker than specimens I have from Yorkshire, Morpeth, Brecon, and Scotch localities. As mentioned above, Hübner figures this form (fig. 617) under the name of *turbida*. Mr. Finlay, of Morpeth, gave me a specimen of this variety with a strongly-marked black lineola above the median nervure in the discoidal cell, and another short one quite at the base of the inner margin. There is also a constant form of variation, equally distributed through the paler type and var. *suffusa*, with a distinct small black dot at the end of the discoidal cell.

Leucania, Och., *brevilinea*, Fenn.*

The type of this species is described in the Ent. Mo. Mag., vol. i., p. 107, by Mr. Fenn, and copied therefrom into Newman's

* I have inserted this species in what seems to me its true position in our lists. It does not appear to me to be a *Nonagria*.

'British Moths,' p. 271. The chief character of the type (from which the name has been derived) is a short black line at the base of the anterior wings under the median nervure.

Var. *sinelinea*, Farn.—In the 'Entomologist,' vol. xi., p. 103, Mr. Farn describes a variety of *brevilinea* under this name, calling it "the form in which the line at the base of the wing disappears." It is the var. *alinea* of 'The Entomologist Synonymic List.'

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA AT WALTHAMSTOW.—A specimen of *Vanessa antiopa* was brought to me to name on the 24th of May, taken by a young gentleman near the Round Pond, Whips Cross, Walthamstow, Essex. The last that was taken near that spot was by my wife.—W. DOWNING; Whips Cross, Walthamstow, Essex.

ABUNDANCE OF RHOPALOCERA.—With reference to the alleged scarcity of butterflies (Entom. 113—116) during the past season, I venture to think, from what various correspondents say, that it was a scarcity of some species and in some localities only. For my part I found several species extremely abundant. For instance, in different parts of Devon *Lycæna argiolus* was very plentiful, and *Thecla rubi* unusually common. In the New Forest *T. quercus* abounded; *Apatura iris* was seen in considerable numbers, as was also *Vanessa polychloros*. I took six beautiful specimens of the latter in six successive minutes, for a friend who had never before seen the insect on the wing. But the commonest butterfly was *Argynnis paphia*; the note in my diary is, "Vast swarms of *paphia*, especially females." At no time during the past five years have I seen it so plentiful; most bramble-sprays were "alive" with them, and it was easy to take them with the fingers. The variety *valesina*, too, was common, perhaps one female in every dozen being the variety. I may add that I saw many *valesina* in union with the typical male.—(Rev.) ALBERT BONUS; Exeter, March 31, 1888.

PUPATION OF COSSUS.—In my notes on the pupation of *Cossus* (Entom. 110), I used the word "cop," forgetting that it

was a local term, and in answer to many enquiries I will now endeavour to describe the meaning of the word. A cop is a low embankment used as a fence or boundary, and is generally made of sand or earth, banked at the top and sides with grass or sods, and as a rule is about $4\frac{1}{2}$ feet high, 2 feet wide at the top, and 5 feet wide at the bottom, often being planted with a dwarf willow (*Salix fragilis*), locally termed "sand-grounders" or "shrew-withins;" entomologically they make an excellent fence. Compared, however, with the new horrible clothes-tearing porcupine wire fence, they take up such a large area of land as to amount to a considerable item on a large farm. I am sorry to say that, as they are the best collecting-grounds in this district, they are gradually being demolished, all kinds of herbage growing on them in profusion, and being a convenient height are easy to work at night for larvæ, &c. One other slight correction: it was my lamented friend James Hamer, not Harmer, whose name was mentioned as being the discoverer of the earth-pupating habit of *C. ligniperda*.—R. C. IVY; Town Hall, Southport, April 21, 1888.

NYSSIA ZONARIA NEAR SOUTHPORT.—From the 29th of March until the 21st of April I have taken the above on some old pasture-land at Crossens. They seem to get scarcer in this district every year. In one locality, Anisdale, I searched two afternoons without finding a single specimen, on land where some three years ago they occurred in abundance. The fields not having been ploughed, I assign the reason to the great numbers of plovers having invaded the district of late. These birds seem to have a *penchant* for tit-bits, such as an apterous female *zonaria*. There were traces of the birds having thoroughly overrun the ground in search of their food. I have never seen *Nyssia zonaria* on the wing, and have collected scores at all times of the night and day. From 7 a.m. until 10 a.m. seems the best time to collect them, when they are usually to be found *in copula*. Also from 10 p.m. until 12 p.m. is a good time to find the males sticking on the railings, they being then very conspicuous in the light of the lamp.—R. C. IVY.

AMPHYDASIS STRATARIA NEAR WINDERMERE.—The late Mr. Newman, in his 'Natural History of British Moths,' p. 61, says that *Amphydasis strataria* "is not common." I was, therefore, astonished during the early part of this month, at finding a

number up here in Windermere. I have no less than nineteen specimens, finding as many as seven in one afternoon within a quarter of a mile. Among them is a distinct variety; both anterior and posterior wings are a bright yellowish brown colour, the anterior wings being, perhaps, rather darker. There is a dark brown mark behind. The centre of the costal margin on each anterior wing, and the posterior wings, are dotted all over like the ordinary type, but on a yellow ground. The body, thorax, antennæ, and legs, are the same as the others. Is this variety generally known? Another thing which I lately found in my searches was a cocoon and empty chrysalis-case of *Dicranura vinula* near the foot of a Scotch fir, and there were no other trees near which the caterpillar could have crawled from. It certainly was this species, because the old caterpillar-skin had the two horns and the hard flat head, and both chrysalis and cocoon correspond to some which I have at present. Mr. Newman only gives willow and poplar as its food-plant. Can any of your readers say whether it does feed on fir?—A. M. Moss; Ellerthwaite, Windermere, April 21, 1888.

[We never heard of *Dicranura* feeding on fir; the larvæ sometimes stray long distances before pupating.—ED.]

HYBERNIA MARGINARIA NEAR SOUTHPORT.—During the present month I have taken some nice forms of *H. marginaria*, varying in colour from pale ochre to nearly black, with scarcely any distinguishing markings. So devoid of these were they, that until my friend Mr. Hodgkinson told me, I did not know they were the same species. Some of the females are quite black. I found them on an old thorn-hedge opposite my house at Crossens. From 12 p.m. until 2 a.m. is the best time to collect them, as they are then to be found in *copula*, and are easier to box than earlier in the night, when they are usually very restive.—R. C. IVY; Town Hall, Southport, April 21, 1888.

DICRANURA VINULA ON TAMARISK.—While gardening this week I found on some old tamarisk-trees in my garden five empty cocoons of *Dicranura vinula*. Later I made a fuller search, and discovered between thirty and forty, but only one containing a pupa. The only trees in the garden, besides fruit-trees, are tamarisks, sycamores, alder, and hornbeam. Presumably, therefore, these larvæ must have fed on the tamarisk on

which I found their cocoons. As this tree does not belong to the willow, sallow, or poplar families, which constitute, according to Newman and other writers, the food-plants for *D. vinula*, I think this fact worth recording. Between this and Pennsylvania Castle, two miles off, there are absolutely no trees, so these larvæ could not have wandered here to spin up. Further, I do not think there is a poplar or willow in the island, and certainly not more than half-a-dozen sallows.—CHAS. E. PARTRIDGE; The Castle, Portland, May 15, 1888.

STAUROPOUS FAGI IN OXFORDSHIRE.—Yesterday, the 21st of May, I found a fine male of the above on a fir-trunk near here, on the Oxfordshire side of the Thames. It is a new insect to our district, as far as I know, and rather an early appearance.—W. E. BUTLER; 91, Chatham Street, Reading, May 22, 1888.

CYMATOPHORA OCTOGESIMA : INFORMATION WANTED.—Have any readers of the 'Entomologist' a specimen of *Cymatophora octogesima*, Hb., = *ocularis*, L., in their collections, with only one of the stigmata present, *i.e.*, with the reniform or with the orbicular, but not with both? The Linnean description of *ocularis* ('Systema Naturæ') is, I feel certain, our species; but Linnæus mentions only "one small whitish *ocellus*, with a darker centre." If such a specimen exists I should be pleased to have information regarding it. I believe from the Linnean description that it is the reniform which is referred to, and that the orbicular was absent in his type specimen.—J. W. TUTT; Westcombe Park, S.E.

UNUSUAL UNION BETWEEN MOTHS.—On the 14th April last, while working sallows at Darenth Wood, in company with my friend Mr. J. H. Carpenter, we took, amongst other ordinary visitants of sallow-bloom, a male *Tæniocampa stabilis* in copulâ with a female *T. gothica*; the two insects fell into the umbrella, when I boxed them. Neither my friend nor myself have ever come across a similar occurrence; and we should be glad to hear if any other entomologists have done so.—P. F. J. LOWREY; 8, Winsdale Road, Brixton Rise, May 12, 1888.

[Many years ago, while collecting near York with the late William Prest, I saw a pair of the same species in copulâ. Although every care was taken by Mr. Prest of the ova deposited by the female, they did not hatch, and were doubtless abortive.—J. T. C.]

THE CODLIN MOTH IN TASMANIA. — The following details were communicated to me by my brother, the Rev. P. E. Raynor, of Hobart, in a letter dated December 21st, 1887—Midsummer Day in that far-distant land. Tasmania was not settled by Europeans till 1803. Therefore the Codlin Moth, as the Tasmanians call *Carpocapsa pomonana*, will soon be celebrating the centenary of its arrival in the colony, if we may presume that the earliest colonists unwittingly introduced it with their apples. My brother says:—"Last year, when we came to the colony at the end of the season, we found all the apples on the ground bored by larvæ of *C. pomonella*; so we had to buy some £3 worth of apples for the winter season, and this with forty apple-trees in the garden. By bandaging we destroyed thousands of pupæ, but the moth is still very plentiful; they are just now appearing in full force, and the larvæ are boring the apples in all directions. The old "Codlin Moth Act" was partial, and only certain districts were declared infected. We are in Glenorchy, an infected district, so we have an inspector round to see that we bandage our trees; but the opposite side of the road is in Hobart (supposed to be a non-infected district); consequently we are rather handicapped in fighting the moth, as our opposite neighbours breed it freely. However, the new Act, soon to come into operation, is universal, and I hope that will help us. I visit every tree, pick up and destroy hundreds of fallen apples under each; then bandage the tree; then with a penknife cut out the grubs, now just under the surface, on the growing apples (thus hoping to save them for preserving, though not for keeping). The imago I capture by the dozen flitting over the trees just at dusk or in the early morning; they are very hard to catch, having so zigzag a flight, and soon darting into the trees; a good many can be caught with finger and thumb, as they sit on the fruit in the daytime laying their eggs. I have also sugared two nights running, but the nights have been too bright and moonlight to do much good; I only got five and three moths respectively. They know very little about the moth and its habits here; all sorts of absurd ideas are circulated and printed; so I am studying the moth in order to gain personal experience which may be of public value. The inspector called the other day; he is an intelligent man, and has studied the moth a little; he was astounded when I told him I had caught thirty-seven moths the

previous day. He was not up to a butterfly-net, and was delighted when I showed him the one I brought with me from England and explained the *modus operandi*." With this letter were enclosed, for my identification, two Tortrices, which are the veritable *pomonana*. I think the moth must have greatly increased in numbers since the year 1879, when I paid a month's visit (from Sydney) to Tasmania. In that year I collected Lepidoptera at Deloraine and Evandale in the north, and at Hobart and Brighton in the south, without making personal acquaintance with the Codlin Moth; nor do I remember hearing much about its devastations, but now every Tasmanian newspaper that reaches me contains allusion to the pest. Tasmania is celebrated for its apples, which are much finer than those grown on the Australian Continent, whither, in consequence, they are exported very largely. It is quite possible that some of your readers may be prepared to suggest, from personal experience or other sources, useful hints for the diminution or annihilation of this foe, so ruinous to the apple-grower in Van Diemen's Land.—(Rev.) GILBERT H. RAYNOR; Fairview, Brentwood, February 10, 1888.

NEPTICULA MINUSCULELLA IN LANCASHIRE.—I am now breeding this species from pear-leaves found last October; also *N. hodgkinsonii* and *Micropteryx sparmanella*, the latter from birch.—J. B. HODGKINSON; Ashton-on-Ribble, April 17, 1888.

CAPTURES AT SALLOW IN HEREFORDSHIRE.—Sallow-bloom was unusually late this spring hereabout, some lasting well into May. The following Lepidoptera were captured:—*Anticlea badiata*, a few, from April 13th. *Anisopteryx æscularia*, one, April 13th. *Asphalia ridens*, one, April 30th. *Pachnobia leucographa*, fairly common, April 11th to 30th. *P. rubricosa*, about nine or ten, April 13th to May 6th. *Teniocampa gothica*, abundant always. *T. incerta*, not taken at all freely, but always present. *T. opima*, April 28th to May 6th. This is the first record of the insect we have. It seems later than the others, and to prefer a warm night. Taken freely, April 30th and May 6th. *T. populeti*, April 7th to 18th, rather freely. *T. stabilis*, abundant always. *T. gracilis*, April 14th to May 6th, freely. *T. miniosa*, one specimen, May 1st. *T. munda*, April 7th to 18th, common. *T. pulverulenta*, abundant always. *Cerastis vaccinii*, in considerable quantity

throughout season. *C. spadicea*, a few, April 11th to 14th, *Scopelosoma satellitia*, a few, April 7th to May 1st. *Xylina socia*, one, May 4th. *X. ornithopus*, two, April 11th and 12th. Compared with notes sent last year by Mr. John Lea this list contains more species, but *Xylocampa areola* was absent this season. both at sallow and on trees, where it is usually common.—T. S. LEA; Tedstone-Delamere, Herefordshire, May 11, 1888.

SPRING LEPIDOPTERA IN CHESHIRE.—On the 10th of March, 1888, after a warm week, accompanied by two entomological friends, I went to Delamere Forest. Our captures were *Hybernica leucophearia*, abundant, including many beautiful varieties; *Phigalia pedaria*, common, and also varied; *Larentia multistrigaria*, *Asphalia flavicornis*, and *Nyssia hispidaria*, also common and varied. I have not seen *H. leucophearia* on the same ground for years. We had the honour of adding *Cymatophora or* and *N. hispidaria* to the list of Delamere insects published by the Chester Natural Science Society. We only saw one female *N. hispidaria*; most of the males were fresh from the chrysalis. All were taken at rest on the trunks of oak and birch-trees.—J. ARKLE; 2, George Street, Chester.

INSECTS CAUGHT AT SEA.—The following extracts from a letter written by my eldest son, whilst on a voyage to New Zealand in the clipper ship 'Euterpe,' may be of interest to the readers of the 'Entomologist,' as adding some further proof of the wandering and erratic habits of insects:—"August 22nd, 1886.—Going down the English Channel under all plain sail, with a gentle breeze. The air is so mild that we are all sitting about the deck, and are very much interested in the erratic flight of a *Pieris brassicæ*, which has flown out this distance, and does not like to make up its mind for the long fly home again. I have tried to catch it, but without success. August 23rd, 1886.—I enclose two butterflies (*Pieris rapæ* and *Vanessa atalanta*) I caught aboard yesterday off the Isle of Wight. These butterflies were over eighteen miles out at sea. September 19th, 1886.—Within the tropics, thirty-five miles S.W. by S., off St. Antonio, one of the Cape de Verde islands, temperature in cabin 82° Fahr., lat. 16° 52' N., long. 26° 10' W. I went up to the mizenmast-head this morning in the hope of seeing land, but the sun's rays were too powerful for me to see any great distance. I was, how-

ever, in some measure rewarded, as I saw a little butterfly, just like one of our small brown fritillaries, fluttering around the mast-head. It alighted on the end of the royal-yard (*i.e.* the top-most spar of all), and I went out to catch it, but it flew away to sea just as I had my finger and thumb about to close upon its folded wings. This is the first butterfly I have seen since those two I caught in the English Channel, and sent to you by the pilot. September 20th, 1886.—I made a capture to-day of a beautiful dragonfly (*Libellula*), 230 miles from land, in lat. $15^{\circ} 2'$ N., long. $26^{\circ} 35'$ W. There were several hovering round the ship, and I managed to knock this one down with my Glengarry. It is in good condition." On December 6th, 1886, whilst off the coast of New Zealand, my son caught another butterfly, coloured somewhat like *V. cardui*, but with an ocellated spot of considerable size on each upper wing. With regard to the dragonflies, they may have been tempted so far from land chasing swarms of flies, which, I believe, are sometimes seen at sea. It is well known that butterflies pass from island to island and continent to continent in swarms, especially in the East, but I am at a loss to account for these butterflies being found so far from land, unless they were stragglers from swarms, or were simply tempted by the fineness of the weather and the smoothness of the sea. Probably the latter may have been the case, as they certainly could not have wandered to sea in search of food.—GEO. J. GRAPES; 32, Buckleigh Road, Streatham Common, April 13, 1888.

SUGARING AFTER RAIN.—A warm night with no wind and a soft drizzling rain is, I should say, the ideal time for sugaring (*Entom.* 140). I recollect on just such an evening in August, 1886, seeing my patches of treacle literally swarming with insects, chiefly *Noctua umbrosa* and *N. xanthographa*, with a few *Amphipyra pyramidea*. I have always found sugaring very successful too after heavy rain.—F. E. WARNER; Grammar School, Dorchester, May, 1888.

SUGARING AT CHRISTCHURCH.—During the summer of 1887 sugaring here was simply an utter failure. About June 20th I commenced working upon large numbers of trees, many more than the previous successful year; and I may say right up to September last I saw but very few insects, on some occasions none at all. However, after that time, chiefly in October and

November, I met with much better luck. Among the most important captures then were:—*Xylina ornithopus* (24), *X. socia* (14), *X. semibrunnea* (1), *Aporophila nigra* (2), *A. lutulenta* (2), *Scopelosoma satellitia*, and others. The last-named has been of unusually common occurrence during the whole of November, and I have supplied other entomologists with quantities of this species in different forms. I should just like to know whether any other entomologists have met with the same experience.—J. M. ADYE; Somerford Grange, Christchurch, January 19, 1888.

THE COLORADO BEETLE.—With reference to the note on page 65, the following information, which I have received from the U.S. Department of Agriculture, will be of interest:—"The original specimens of *Doryphora 10-lineata* were captured 'on the upper Missouri,' and although it undoubtedly occurs in the State of Colorado, it is more common in Nebraska and other neighbouring States. It originally occurred in the Rocky Mountain region on *Solanum rostratum*, and was undoubtedly abundant where that species grew. The coleopterous genus *Doryphora* was founded by Illiger in 1807, while the lepidopterous genus of the same name was founded by Heinemann in 1870. The last American check-list (Henshaw's) retains *10-lineata* in *Doryphora*." I have found *Solanum rostratum* growing about Denver and other localities in Colorado, on the eastern slope of the mountains, but have not yet met with *Doryphora*. The genus *Doryphora*, Hein., being preoccupied, might conveniently be changed to *Doryphorella*.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, March 8, 1888.

ERRATA.—In the article last month upon country membership in the South London Natural History Society (Entom. 121), the address of the Society was in error printed E.C., whereas it should have been Bridge House Hotel, London Bridge, S.E. This has caused many letters to be returned, there being a "Bridge House," E.C., where the Society was not known. On p. 48, *B. muralis* var. *obscura*, at the end of the description occurs the phrase, "Herr Hoffmann Alps." This should be placed after the word "Sandwich," at the end of the paragraph referring to var. *par*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*May 2nd*, 1888.—Dr. D. Sharp, F.L.S., President in the chair. Major J. W. Yerbury, R.A., of the Army and Navy Club, Pall Mall, S.W.; and Mr. P. W. Mackinnon, of Masuri, Western Himalayas, India, were elected Fellows; and Mr. H. F. Dale, Dr. J. W. Ellis, and Mr. A. J. Croker were admitted into the Society. Dr. P. B. Mason exhibited an hermaphrodite specimen of *Saturnia carpinii* from Lincoln, and another specimen of the same species with five wings, bred at Tenby. Herr Jacoby exhibited female specimens of *Chrysomela japana*, collected by Mr. J. H. Leech in Japan, and called attention to a sexual structure in the middle of the abdominal segment. Mr. Adkin exhibited a variety of *Eubolia bipunctaria*, taken at Box Hill, in July, 1886. Mr. W. F. Kirby exhibited, for Dr. Livett, a curious discoloured female specimen of *Ornithoptera minos*, Cramer. Mr. H. Goss exhibited, for Mr. W. Denison-Roebuck, a number of specimens of an exotic species of Bee obtained by the Rev. W. Fowler, of Liversedge, from split logwood. The cells or pouches were very irregular and rough and altogether unlike those in the "comb" of any known British species of Bee. Dr. J. W. Ellis read a paper entitled "Remarks on the British specimens of the (so-called) *Aphodius melanostictus*, Schmidt"; and he exhibited a number of specimens and drawings of this species and of *Aphodius inquinatus*, F. A discussion ensued, in which Dr. P. B. Mason, Dr. Sharp, Mr. Champion, and Dr. Ellis took part. Mr. E. Meyrick communicated a paper "On the Pyralidina of the Hawaiian Islands," the materials for which paper consisted principally of the collection of Lepidoptera Heterocera formed by the Rev. T. Blackburn during six years' residence in the Hawaiian Islands. Mr. Meyrick pointed out that the exceptional position of these islands renders an accurate knowledge of their fauna a subject of great interest. He stated that of the fifty-six known species of Hawaiian Pyralidina nine had probably been introduced through the agency of man in recent times; but he believed the remaining forty-seven to be wholly endemic: of these latter the author referred twenty-six species to the *Botydidae*, twelve to the *Scopariadæ*, four to the *Pterophoridae*, three to the *Crambidae*, and

two to the *Phycitidæ*. Dr. Sharp, Mr. McLachlan, Dr. Mason, and Mr. E. B. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 26th, 1888. T. R. Billups, F.E.S., President, in the chair. Messrs. J. E. Pearce and J. Pearce were elected members. Mr. Adye exhibited *Asphalia ridens*, and varieties of *Tæniocampa munda*. Mr. Lea, small specimens of *Hybernia leucophæaria* from Richmond Park, and commented on their size. Mr. Dobson, a specimen of *Smerinthus tiliæ*, with the lower part of the central band of the superior wings absent. Mr. Dennis, three streaked varieties of *Spilosoma lubricipeda*, and a similar var. of *S. menthastri* taken in his garden at Kingsland. Mr. T. R. Billups, a living specimen of the genus *Pelopæus*, or sand-wasps, from Honduras; also a species of Blattidæ, *Paratrupes elegans*, from South America. Mr. J. Jenner Weir read a communication from Mr. T. D. A. Cockerell, referring to his note on the origin of *Gonepteryx cleopatra* and *G. rhamni*, read at the meeting on the 8th of March last; Mr. Cockerell being of opinion that *G. cleopatra* and *G. rhamni* are climatic forms of one species. Mr. Weir said, seeing that *G. rhamni* and *G. cleopatra* existed over a large part of Europe in the same districts, and had synchronous appearance in the latter end of the summer and again after hybernation in the spring, he was unable to accept Mr. Cockerell's ingenious theory of the origin of the two species. Mr. J. W. Slater read a paper on "Sanitary and Antisanitary Services of Nature."

May 10th, 1888. The President in the chair. Mr. W. Martin was elected a member. Mr. R. Adkin exhibited full-fed larvæ of *Ephestia kuhniella*. Mr. Cooper said he had taken this moth very freely in a bakery at Leytonstone, and had found the larvæ feeding in great numbers; there was very little flour stored in the bakery, but the larvæ fed on the dust collected on the beams. He had taken odd specimens of the species for the last four years. Mr. Billups, living examples of *Hydaticus seminiger*. The remainder of the evening was devoted to the exhibition of microscopical objects, many members of the South London Microscopical Society assisting.—H. W. BARKER, *Hon. Sec.*

REVIEW.

British Oribatidæ. By ALBERT D. MICHAEL, F.L.S., F.Z.S.,
F.R.M.S., &c. Vol. II. Ray Society. 1888.

THE second and concluding volume of Mr. Michael's valuable Monograph of the British Oribatidæ has been issued by the Ray Society to the subscribers for the year 1887. The first volume contained twenty-four plates of species and seven of anatomical details; the present contains thirty-one plates of species, thus bringing up the total number of plates in the complete work to sixty-two. The author states in the preface to the volume, that "Although subsequent discoveries will doubtless add to our knowledge of the group, I think the book has been prepared carefully; it certainly has been executed to the best of my ability, and I believe that it contains as much information relative to the family as the present state of science respecting the *Acarina* permits." There can be no doubt that for many years to come this monograph will be a text-book for Acarologists; indeed, if it have a fault, it is that the subject has been treated in such a masterly manner that others will be deterred from entering upon it. It would be quite impossible to convey in words the least idea of the beauty of the plates, the *bizarre* forms of the species delineated, or the exquisite anatomical details; indeed, how the latter could have been prepared is a marvel, as the points of the dissecting instruments would be nearly as large as the *acarus* operated upon, yet they are as clearly made out as would be the visceral anatomy of one of the larger vertebrates.

The bibliography of the subject is well understood and dealt with by Mr. Michael, and at pp. 619—627 a list of books and papers giving information relative to the Oribatidæ is inserted; indeed, in every way the student is thoroughly assisted; even tables are given for conversion of millimetres into inches. Whilst on the subject of assisting the student, it may be remarked that all the plates have full descriptions on the opposite pages; thus the time wasted in turning over leaves when making a reference, and the unnecessary wear and tear of the book, are avoided. The work on the whole is a model of painstaking scientific accuracy, illustrated with artistic excellence.—J. J. W.

OBITUARY.

HENRY JAMES STOVIN PRYER died unexpectedly on the 17th of last February, at his residence, 127 Bluff, Yokohama, Japan, in which country he had resided as a merchant for the previous seventeen years. Of great energy, strong constitution, and usually robust health, the attack of bronchial pneumonia which caused his death was his first really serious illness, although he had reached his 37th year. Curiously, it is said, he was attacked upon the same day of his age on which his father, who was a solicitor, living near Finsbury Square, London, contracted his fatal illness. This affected the subject of our notice so seriously that he at once made up his mind he should not get better, and prepared his affairs accordingly; at any other time he might perhaps have successfully battled with his illness. Mr. Pryer commenced the study of Entomology quite early in life, forming a collection of Lepidoptera and one of Trichoptera, chiefly from the neighbourhood of London. Among the former he took *Sterrhia sacraria* close to London, and *Eupithecia togata* in Essex. *Trachonitis pryerella* was named in his honour. After his arrival in Japan he systematically studied the Natural History of that interesting country, and has from time to time sent to England valuable consignments of specimens taken all over the Islands. For a period in 1877 he held the appointment of Director to the Government Natural History Museum at Tokio, but the scheme having failed, he returned to commercial pursuits. For his many contributions to the collection of living animals in the Zoological Society's Gardens in London he was made a corresponding member of that Society. He was a member of the Entomological Society of London, and occasionally contributed papers; notably one upon remarkable cases of mimicry in insects of very different orders (*vide* Trans., 1885, pt. III.) His great work, which unfortunately remains a fragment, was a monograph of the Rhopalocera of Japan, already noticed in these pages (Entom. 23). The first part was issued and the second part of the three proposed was ready at the time of his death. It is sincerely to be hoped that means may be found for its completion. A list of the Lepidoptera of Japan from his pen, appears in the Transactions of the Royal Asiatic Society's Japanese Branch. He also published, in connection with Captain W. Black-Keston, a list of the Birds of Japan. Mr. Pryer's biological work extended to other parts of the Eastern World. He visited China in 1871; Borneo in about 1884, where his brother, also an excellent naturalist, is official resident of the British North Borneo Company; and in June, 1886, accompanied by a hired Japanese collector, he investigated the Loo-Choo Islands. Little was then known of the fauna

of this group ; therefore a large proportion of the species of insects taken were new to science. The birds of this collection have been described by Mr. Seeböhm, and the Lepidoptera are yet undescribed. The results in the group Coleoptera were especially good. Mr. Oliver Janson, of Little Russell Street, London, acted in England as Mr. Pryer's agent in matters zoological, and we owe to Mr. Janson our thanks for much of the material from which this notice has been constructed.—J. T. C.

M. E. GLANVILLE.—Intelligence of the death of Miss Glanville, the able and kind-hearted Lady Curator of the Albany Museum, Graham's Town, South Africa, will be received with great regret by her home friends ; and in her scientific labours, amongst her many surrounding friends in her own adopted land, her loss will be keenly felt. On the decease of her father, the late B. J. Glanville, who might be termed the founder of the Albany Museum at Graham's Town, Miss M. E. Glanville was, to the great gratification of those connected with Natural History in that district, elected to take his place, and there, up to her last illness, terminating in her decease on April 4th, she worked with an assiduity and intelligence which rendered the results strikingly methodical and complete. Her especial claim to the notice of the readers of the 'Entomologist,' rests on the practical as well as scientific attention she has long been rendering to Economic Entomology. For years she has devoted attention to the life-histories of the injurious crop insects of East Province, S. Africa, and, in co-operation with a few other leading observers, forwarded specimens of some of the most injurious kinds to the writer, together with such notes as could be procured of their histories. Those who are intimately acquainted with the general carelessness existing as to these points in ordinary colonial life, will appreciate the difficulties of the work. Nevertheless, Miss Glanville, by her hearty devotion, was able to collect some amount of data, which, there is good reason to hope, will prove a sound starting-point for information to gather round, and which will be of solid future benefit to the agriculturists of the eastern portion of the colony. In the words of a friend who knew her well, "good, amiable, self-sacrificing, and obliging," she worked to the last, and declined to take the rest needed, because, in her own words, her "absence would necessitate closing the museum, and cause disappointment to visitors." Marked respect was shown to the memory of the kind and accomplished lady by the attendance at the funeral of many scientific or personal friends, besides the members of her family, and her loss is one which will be much felt, both as a friend and hearty labourer.—E. A. ORMEROD.

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[No. 302.]

HIGH FLAT-SETTING OF LEPIDOPTERA.

BY ARTHUR CANT.

As I have had considerable practical experience in both the continental and British methods of setting Lepidoptera, and am known to have a decided preference for the former, I have been asked by several entomological friends to point out what I consider to be the advantages of the "high-flat-set" system.

From an individual point of view, I could enumerate many more or less important advantages resulting from having Lepidoptera set in the continental style, but I think, for present purposes, reference to three of these will suffice:—

(1) Facility of examination and study. All lepidopterological students will admit that even the upper surface of a butterfly or moth with drooping wings is not so readily examined as one whose wings are spread out flat in a plane with the body. In the majority of cases, the under surfaces of insects set in the British style are not easily examined or compared one with another; but, on the other hand, when dealing with flat-set insects, there is nothing to interfere with the most complete examination, as we have then under observation a flat surface instead of a concave one, consequently there is no distortion.

(2) Preservation of specimens. Insects set high on the pins are safe from the attacks of mites.* If an infected specimen is introduced by chance into the box or cabinet drawer there is no

* This fact has received recognition at the hands of British entomologists although they still use the sloping setting-board.

danger of the other insects being attacked unless any should be in actual contact with the "mitey" one.

(3) Uniformity. With high-flat-set insects it is possible to attain a degree of uniformity in a collection that must commend itself to all lovers of order and regularity.

The foregoing may be taken as the principal reasons why I advocate the high-flat style of setting, but, as I have said, there are many others. These, I am sure, will make themselves apparent to all who may try the method. Of course, what I think an advantage others may consider the reverse, and, foreseeing the possibility of this, I have mentioned three only, because there can be no difference of opinion about them.

With regard to uniformity of specimens in a collection, there is no system of setting with which I am acquainted that attains this end so thoroughly as that under consideration. In British-set insects we have all grades in the slope of the wings and in the length of pin showing beneath the specimens. In some cases there is hardly enough of the pin through the insects to secure them in the cork. In others the specimens are run up to beyond the middle of the pin. To my eye, both look equally bad; the one appears to be plastered on the bottom of the drawer like a "blue-bottle" on a "ketch-'em-alive," and the other suggests an unsuccessful attempt at the continental style. Of course the position of an insect on the pin and the dip of its wings are in a measure regulated by individual fancy, consequently vagaries in these matters are sometimes met with in continental-set insects; as a rule, however, there is greater uniformity in a collection of high-flat-set insects than is usually seen in a collection consisting of specimens set on sloping boards, granting that the specimens comprised in the respective collections have been operated upon by various manipulators.

That any interest at all should be taken by British entomologists in the continental method of setting is in itself satisfactory, as it shows that the insular practice is not quite all that could be desired, and that some at least are quite ready to leave the ancient groove. It is perhaps too much to expect that those who have their collections complete, or nearly so, will essay the task of re-setting; but to those who are not in this enviable position, and who wish to form a collection of Lepidoptera in which the specimens shall be at once pleasing to the eye and in the best

possible shape for study, I would say, set your insects high on the pin, and let the wings be flat.

In high flat-setting of course a different kind of board or "set" is required, to that in general use in this country. These are made of soft pine or cork, and are of the usual length. Those I have in use were made by Mr. Crockett, of Riding House Street, Great Portland Street, W.* I find it a great advantage to have the sides slightly inclined thus:



After an insect is removed from the board there is almost invariably a tendency for the wings to droop a little. The tilt in the setting allows for this, and an almost perfectly flat wing-surface is the result.

The *modus operandi* in setting Lepidoptera on flat boards may be identical with that usually practised, but it is a most useful plan to use strips of transparent tracing-cloth. These should be the length of the board, and the width in accordance with the insects set thereon, care being taken that the inner edge should not come too close to the base of the wing, but the outer edge should lap well over the apices. Bead-headed pins are the best for fastening down the strips.

It is not essential to use the foreign pins, as sizes such as Nos. 2, 3, 11 and 12, of Kirby, Beard & Co., would do very well for Macros, and the Micros could be set on ordinary pins and then staged on cork or pith, thus obviating the necessity of having turf-lined cabinet drawers. These last would be indispensable if Carlsbad and Vienna pins were used.

93, Robert Street, London, N.W.

VARIATION OF CERTAIN AGROTIDÆ.

By J. W. TUTT, F.E.S.

THE group of Lepidoptera containing *Agrotis tritici*, *A. cursoria*, *A. aquilina*, and *A. obelisca* presents, and always has presented, such a vast range of variation and consequent difficulty of determination, even to our best lepidopterists, that it seems only natural they would from time to time, have something to say concerning such a difficult subject. It seems to me, however,

[* May also be obtained through Mr. Janson, Little Russell Street, Bloomsbury, W.C.—ED.]

that the study of the type-species of these different forms, is very necessary to enable us to get any knowledge of what is really meant by these species, or to find how far our ideas agree with or differ from the intentions of those lepidopterists who named these species.

In the following remarks I have entirely neglected the consideration of *A. nigricans*, because, in all its varietal forms there is no doubt about the species, and even in its most extreme varieties it is not likely to be mistaken for anything else. I will simply add that the dark Scotch form is the Linnean type (its name suggests it); the Southern specimens are a mixture of var. *fumosa* (dark with a yellow spot), *ruris* (the red form), *obeliscata* (with a dark rectangular spot between the stigmata), and *marshallana* (beautifully marbled with yellow); the two former generally occur in abundance, the two latter more rarely; in fact the last is an excessively rare variety.

Agrotis tritici.—The type of this species was described by Linnæus, 'Systema Naturæ,' No. 320, as:—"Noctua spirilinguis cristata cinerea alis maculis, duabus pallidioribus unaque nigricante. Stigma ovale et reniforme ut in reliquis, juxta ovale internis macula nigra ejusdem magnitudinis similis *Ph. graminis*."

This reference to *graminis* makes it quite clear that the type was striated, that is, it had a streaked costa and pale median nervure, together with a row of wedge-shaped markings parallel to the hind margins, these all being constant characters of every variety of this species. In addition, we learn that the colour was cinereous, that the two ordinary stigmata were pale, the claviform black, and that there was a black spot of equal size just within the orbicular stigma. Taking all these things into consideration, there is little difficulty to fix on a type; the colour, as before mentioned, is cinereous, and we have only to imagine a specimen of such a colour, with all the characteristic markings, to settle the matter. The first figure in Newman's 'British Moths' would fulfil all the conditions. So much for the type.

A. aquilina.—Hübner's figure 135 represents the type of this species, and it may be described as follows:—Anterior wings of a dull dark brown, with the space beyond the reniform, *i. e.*, between the reniform and outer margin, darker than the base; also darker brown between the stigmata. The costa and median nervure scarcely paler than the remainder of the wing, and then

simply a slightly paler shade of the ground colour. A dark streak runs under the base of the median nervure; the five wedge-shaped lineolæ which are so characteristic of the typical *tritici* are well developed. Hind wings grey, with a dark marginal line, dark nervures and lunule.

A. obelisca.—Hübner's figure 123 represents the type of this species. It may be described as of a deep, dull, reddish colour, with ochreous costa and dark hind margin, well-marked stigmata, but no wedge-shaped streaks near hind margin. Hind wings white, with a reddish hind margin.

The above three species are what I may term the characteristic pale costa part of the group.

A. cursoria.—The type of this species is represented by Hübner's figure 540. The anterior wings are almost entirely like the figure of *cursoria* in Newman's 'British Moths,' p. 329, but perhaps appear a trifle narrower. It may be described as of a pale reddish ochreous, with an abbreviated, followed by a complete, double, black, basal line; no claviform, but the reniform and orbicular outlined in pale; two short, dark, transverse, costal streaks above the reniform, a faint wavy line from the base of the reniform to the inner margin; a double transverse wavy line beyond the reniform; another wavy line from the apex to the anal angle includes a dark reddish brown hind margin. Hind wings ochreous, with a dark reddish gray margin, and reddish lunule. N.B. No trace of a costal streak on the anterior wings.

Such are the descriptions of the type-specimens. Now for a few general remarks. It will be seen from these descriptions that the types of *tritici*, *aquilina*, and *obelisca*, have all a costal streak developed, this costal streak giving a special character to the group. It will be seen that *cursoria* has no costal streak or longitudinal markings, but that the characteristic transverse markings are the development and completion of the abbreviated and broken transverse markings in the other group, agreeing with them in every particular; such abbreviation and breaking-up being due to the presence of the longitudinal markings which pass through them. In the species of the first group (with pale costæ), the ground colour has had a great deal to do with their determination as distinct species by lepidopterists, the brown specimens having been referred very properly to *aquilina*, the

dark red and black specimens to *obelisca*, whilst all other specimens have been referred to *tritici*. Those which have had no costal streak have been generally lumped together under the name of *cursoria*. Such has been the general method of dealing with these species. To return to the early authors, Hübner only figures one specimen of *tritici* and that is, according to Dr. Staudinger, a male *crassa*, but he figures three *aquilina*. His figure 135 which I have previously described, is a really good example of the form known as *aquilina* in Britain, but his other two figures of *aquilina* 535 and 536 are nothing like his figure 135, and themselves represent two entirely different forms. His figure 535 has a yellowish costal streak and a white median nervure, whilst the figure 536 is of a dark red colour with a white costa and white median nervure. Thus we see Hübner figures three distinct *aquilina*, and all three represent different, and not uncommon forms of *tritici*. Unless we are ready to accept all dark brown and red-streaked *tritici* as *aquilina* on the strength of Hübner's three figures, we must throw out all idea of *aquilina* as a species. Boisduval, many years after, described a number of varieties of *tritici*, including some of Hübner's so-called species; but after a few years Guenée, when writing his 'Noctuelles,' vol. v., p. 289, takes Boisduval to task for referring Hübner's *fictilis* to *tritici* instead of, as he thought, to *aquilina*. Thus we find these two great naturalists at war about the matter, and we find Guenée laying down the law that the type of *aquilina* consists of "those individuals of a pale, clear, brownish ground colour, with the markings, stigmata, and wedge-shaped marks clearly developed." We must, however, bear in mind that afterwards ('Noctuelles,' vol. v., p. 289) he includes *fictilis* and *vitta* as varieties of *aquilina*. To show too, how little faith should be pinned in Hübner's power to discriminate the species of *Agrotis*, it must be remembered that *fictilis*, as well as *vitta*, *eruta*, *ruris* and *villiersii* were figured by him as distinct species. Since Guenée, no one, except the British authors, has ever attempted to set up *aquilina* as a distinct species; and no one but British lepidopterists now attempts to prove what seems to me an utter impossibility. I have specimens of the species from most of those lepidopterists who think they get it. Nearly all the specimens are brownish (as of necessity they must be); all are taken freely where *tritici*

occurs; most lepidopterists have a generally correct idea of what *aquilina* ought to be; a few, however, do not seem even to understand these elementary necessities. The continental lepidopterists long ago understood this question, and Hübner's figure 135 takes its true position in their lists, as the type of *tritici* var. *aquilina*, his figures 535 and 536 being referred to other varietal forms.

With regard to the old British authors they have had a comparatively easy task. Every new form of *tritici* which occurred was described as a new species and named as such; the forms represented by the type-names are difficult to trace, but Wood's, and Humphrey & Westwood's publications have figures of most of these varieties.

The variation of *tritici* is so extreme, that it is almost impossible to give any idea of it. Without egotism, I may safely assert, that I have one of the finest series of this species at present in existence. Some 500 to 600 specimens, picked from perhaps twenty or thirty times that number of specimens, include some of the most magnificent forms that can be imagined. The ground colour varies from pale whitish grey to intense black, but with all this variation there is one thing that immediately strikes a student when a classification or grouping is attempted, *viz.*, that all these moths can be divided into two groups—(1) those that have no distinct pale longitudinal markings (costal streak, nervures, &c.), but have very complete transverse markings (as in typical *cursoria*); and (2) those that have distinct pale longitudinal markings, with the transverse ones broken up. I have divided my specimens upon this plan, into four distinct sections according to ground colour, *viz.*, grey, slate, brown and black, and these again are distinctly graduated according to the depth of these various ground colours. I place forms with the same ground colour in following rows—(1) with the transverse markings and not the longitudinal; (2) specimens with the same ground colour as the previous row but with longitudinal markings. Nearly three drawers of picked *Agrotis* arranged in this way makes material for careful study and carries conviction with it. I want now specially to refer to those forms of *tritici* which are without longitudinal markings. These specimens, whitish grey, slate-colour, yellowish ochreous, brown, reddish brown, intense black, with every intermediate colour, have every line, every mark the

same as Hübner's *cursoria* and everyone else's *cursoria*, but they are *tritici* taken in copulation with streaked *tritici* and occur in equal abundance with these *tritici*, some forms, streaked and unstreaked, being of equal rarity. The great mass of these forms came from one locality, Deal, but I have a very large number of *tritici* from other localities, thanks to the kindness of my numerous correspondents. Misled by the text-books, I considered all these striking unstreaked specimens as *cursoria*, and like many others, put them in my cabinet as such. Newman gives Kent as a locality for *cursoria*, but I do not believe anything of this form which we can look upon as at all distinct from *tritici* is obtainable on our Kent coast, and there is no doubt that the endless variation from grey-white to rich red-brown and black, precludes the idea of selecting one special form and saying, "This is *cursoria*," to the exclusion of all others, simply because they are of a different ground colour.

(To be concluded.)

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

BY J. W. TUTT, F.E.S.

(Continued from p. 155.)

Leucania, Och., *straminea*, Tr.

The type of this species is described by Treitschke as "Alis anticis pallide stramineis, punctis tribus medio pluribus ad marginem in seriem dispositis nigris; posticis albis fusco venosis." (Treitschke, 'Die Schmet. von Europa,' vol. v., p. 297.) This typical form, with only "three dots on the anterior wings, besides the row of minute dots on the extreme hind margin, and with hind wings and fuscous nervures," is not at all a common form with us. Generally there are slight traces of a more or less complete transverse row of dots, and traces of a row of dots on the nervures of the hind wings, besides which a dark longitudinal streak is found under the median nervure of the anterior wings. In 1883 and 1884 I took a large number of this species in North Kent, and I found it one of the most variable species in its genus. In my long series, picked from a great number, I have

four very distinct forms besides the type. Summarised these are:—(1) A pale form, without any dots or markings. (2) The type, with three dots on anterior wings only. (3) A form with a transverse row of dots on anterior wings and another on nervure of posterior wings, with a faint shade under the median nervure. (4) A red form. (5) A form much suffused with black scales.

α. var. obsoleta, mihi.—This variety has the anterior wings of a delicate wainscot or straw-colour, with the median nervure pure white, below which is a faint trace of the basal part of a longitudinal dark shade. The three dots on the anterior wings are entirely absent. Posterior wings pure white, no markings or dots. The crest on the thorax very distinct. I have only one specimen of this exceedingly rare and extreme form.

β. var. intermedia, mihi.—This variety most nearly approaches the type. The wings are of the same pale straw or creamy-white colour, with a central dot, and, like the type, has two of the dots, of those which form the transverse row so characteristic of the following varieties, very conspicuous, *viz.*, the one above and that below the median nervure; but, in addition, the others which form the series are more or less developed. A longitudinal ochreous dash, darker than the ground colour, extends under the base of the median nervure; a few ochreous scales scattered over the spaces between the nervures. Posterior wings pearly-white, with a faintly-marked row of dots on the nervures parallel to the hind margin. This form, therefore, constitutes a link between the type and the following varieties.

γ. var. rufolinea, mihi.—Anterior wings bright reddish ochreous, all the wing-rays pale, so that the anterior wings appear to be made up of alternate fine lines of red and white; the central dot distinct, a complete row of black dots parallel to the hind margin; a well-developed dark reddish shade under the basal part of the central nervure. Posterior wings white, much shaded with grey (more so in males than in females), with a row of black dots on the nervures. Many specimens of this red variety have the anterior wings much suffused with black scales, as in *var. nigrostriata*, but the latter never has a red ground colour.

δ. var. nigrostriata, mihi.—The anterior wings pale wainscot-brown, so thickly suffused with black scales as to obscure the ground colour; the wing-rays very pale, sometimes white, so

that the wing has the appearance of being crossed with alternate striations of black and white lines; a very dark, almost black, shade runs under the median nervure, the central dot and row of dots present, as in the variety *rufolinea*, but more inconspicuous, owing to the suffusion. Posterior wings much irrorated with dark atoms, giving them a very dark appearance. Females of this variety are very rare. My series of this form are chiefly males.

Leucania, Och., *impura*, Hb.

The type of this species is represented by Hübner's fig. 396. The species was previously figured by Albin, plate xxx.:—*g*, upper side; *h*, under side. As, however, none of his figures are named, Hübner's name and description must stand. His fig. 396 may be described as follows:—Anterior wings of a pale wainscot-brown colour, with a dark longitudinal shade under the base of the median nervure, broad, but not reaching to the end of the discoidal cell; a black dot at the end of the discoidal cell, and four dots are developed of the transverse row parallel to the hind margin, *viz.*, two towards the apex, one just below the outer edge of the median nervure, and one just above the inner margin; nervures dusky. Posterior wings grey, nervures darker, extreme border spotted. It must be noticed that the peculiar development of the short longitudinal streak under the base of the median nervure is very unusual, and that the posterior wings are much paler than in our specimens.

α. var. fuligosina, Haw.—This is our ordinary form of *impura*, which, as I have pointed out above, differs from Hübner's type. "The anterior wings are ochreous, with or without a reddish tinge, with three minute and often almost obliterated black dots, placed as in a triangle; the extreme hind margin marked with very minute black dots; the nervures white towards the outer margin. The posterior wings fuscous or smoky, with pale cilia, and an indistinct lunule" (Haworth's 'Lepidoptera Britannica,' p. 174). It will be seen that the variety has not the double spot above the median nervure (only one being developed), nor the spot above the inner margin (just beyond the anal angle), which characterise the type, and the hind wings are darker. The Scotch specimens are smaller, with clearer fore wings and darker hind wings than our southern specimens.

β. var. punctina, Haw.—This is the red form of *impura*: "The

anterior wings entirely red, with nervures distinctly marked, the extreme hind margins with fuscous dots; the hind wings pale grey, with a broad cinereous patch at the anal angle" (Haworth's 'Lepidoptera Britannica,' p. 174). The hind margin is in some of the red varieties unspotted, and the posterior wings are often very dark. I have a fine series of this rufescent form, obtained from the marshes in this neighbourhood a few years ago. Haworth described *punctina* from only two specimens.

γ. var. *punctilinea*, mihi. — The anterior wings reddish-ochreous, much suffused with dark scales; the row of spots parallel to the hind margin well developed, forming an almost continuous row, commencing on the costa and ending on the inner margin; a dark shade under the pale median nervure. The posterior wings very much suffused, and very dark; in some specimens almost black. I have a few specimens of this variety, showing the extreme variation in the development of these dots, captured on Greenwich Marshes in 1883; but such forms are rare.

Leucania, Och., *pallens*, L.

The type of *L. pallens* has a pale ochreous ground colour, with paler wing-rays, and one or two black spots. (There are generally three black dots—one in the centre of the wing at the end of the discoidal cell, the other two being beyond the centre, and situated one directly above the other, immediately below the median nervure, and being a portion of that row, parallel with the hind margin, which is normal in the strongly marked varieties of *straminea*, occurs in var. *punctilinea* of *impura*, but does not seem ever to be developed in this species. Specimens of all shades of colour obtaining in this species are very inconstant as to the number of these three dots developed). Hübner's fig. 234 of *pallens* is typical, but has three dots. The Linnæan description of the type is as follows:—"Spirilinguis lævis, alis deflexis pallidis immaculatis: marginibus posticis subtus nigro punctatis." "Alæ superiores supra puncto 1, sed 2, nigro, minimo. Subtus alæ atomis nigris, imprimis margine postico nigro-punctato." ('Systema Naturæ'). The ground colour varies from pale ochreous (nearly white) to bright ochreous-red. It rarely happens that the anterior wings are suffused with black scales to an appreciable extent. The hind wings are typically

pure white in the male, with the hind margin slightly shaded with grey in the females.

α var. *arcuata*, Stphs.—The colour of the anterior wings of this variety is pale wainscot, with two black dots on the disc. Posterior wings white, shaded with ashy brown, and with an arched row of brown spots on the veins beyond the centre of the wing. Under this variety I would, therefore, include all the forms (whatever their colour) which have this arcuated row of dots. Such a development is very rare in this species, although normal in most of the varieties of *straminea*, and occasionally occurring in *impura*. I have several specimens with one or two dots developed, but the only specimen in my series that has any approach to a complete row was captured by Mr. Young, at Rotherham, Yorks.

β. var. *ectypa*, Hb.—Hübner's fig. 231, which he names *ectypa* is undoubtedly a fine red form of *pallens*. It has the anterior wings of a bright reddish ochreous with pale nervures, no central dot, two dots in outer row, one just below the third branch of the median nervure, and one just above the median nervure. Hind wings whitish grey, with a dark grey shade parallel to the hind margin. Dr. Staudinger describes it as "*Alæ anteriores rufæ.*" I have many specimens in my long series almost like Hübner's figure. The development of the grey shade on the hind margin into a transverse band, is rarely very distinct in British examples. This is treated by Gueneé as a distinct species in his '*Noctuelles*,' p. 94.

γ. var. *rufescens*, Haw.—This variety, treated as a distinct species by Haworth, is thus described by him, "*Rufescens, alis anticis venosis immaculatis, posticis (costa excepta) certo situ fusciscentibus;*" "*alis certo situ lineolis 3-4 obsoletis, fuscis, posticis fuliginosis venis fuscis.*" It is a very slight modification of *ectypa* differing from that variety in having none of the three ordinary dots. Otherwise both are red, both have the wing-rays very pale, both have the hind-wings shaded on the outer margin, although in *ectypa* the shading of the hind margin takes a banded form. The anterior wings in *rufescens* have also three or four dusky streaks visible in certain positions. These streaks are very distinct in some red specimens I have. I believe that both this form and *ectypa* occur very freely everywhere in Britain with the type. I have them from

many Scotch and Irish localities. The variety *rufescens* is, without doubt, the *ectypa* of Boisduval.

δ. var. *suffusa*, St.—Another modification of var. *ectypa*, with a tendency to become melanic, having “the fore wings reddish, streaked with whitish ashy between the veins; with a single dusky dot at the apex of the discoidal cell; and two or three obsolete brownish streaks near the extremity; hind wings whitish, with a broad, sub-apical, dusky stripe; the apical margin paler.” (Humphrey & Westwood’s ‘British Moths,’ p. 218.) The variety is figured in the same volume, plate xlvii. fig. 8. The figure represents the space below the median nervure and between the other nervures thickly sprinkled with minute black atoms, and this figure is identical with a fine dark specimen I captured at Deal in July, 1887.

ε. var. *ochracea*, St.—The type of this variety “measures only 13 lines in expanse; the fore wings are ‘pale ochreous, with a slight rufescent tinge in certain lights, immaculate, obscurely streaked with pale fuscous between the nervures; the striæ at the base and on the inner margin being the darkest, as in *L. comma*; hind wings whitish ash, with the margin slightly darker.’” (Humphrey & Westwood’s ‘British Moths,’ p. 218.) This small specimen taken at Darenth in August was supposed by the late Mr. Henry Doubleday to be a specimen of the second brood. I have, however, many large specimens of the summer brood from various localities answering this description, and I would propose that the name *ochracea* comprise all reddish ochreous forms, whatever the number of dots developed. Var. B of Guenée’s ‘Noctuelles,’ p. 93, would appear to belong to *ochracea*. It is described as having “a reddish shade under the median nervure, and similar streaks towards the outer margin. Inferior wings having the nervures sprinkled with black on the disc.”

(To be continued.)

A FORTNIGHT IN SWITZERLAND.

By R. J. HUTCHINSON.

THIS spring it was my good fortune to spend a short holiday in the beginning of May in Switzerland, and although I did not go out with any intention of collecting, the beauty and, to

English eyes, rarity of the butterflies about, induced me to purchase a net and pill-boxes, and capture some thirty species. The dates between which they were taken were May 3rd to May 18th, or just about a fortnight; and probably, had we stopped a few days longer, the list would have been largely augmented, as they were just beginning to come out in quantities when we left. Having no setting-apparatus, we simply enclosed the specimens in small paper envelopes, and with a very few exceptions, they all arrived safe in England, and were set out without much difficulty after relaxing. During the first week, from May 3rd to 11th, we were staying at Bex, in the Rhone valley, some fifteen miles above the Lake of Geneva, and a favourite haunt of butterflies. From here one can take short train journeys up and down the valley, and come across fresh species at every place. The following was the diary of captures:—

May 3rd. Very hot and sunny; in a huge orchard-meadow we took several *Vanessa antiopa*, all hibernated specimens. *Leucophasia sinapis* was very abundant, besides *Pieris rapæ* and *P. napi*, but otherwise there were no others except an occasional *Thecla rubi*.

May 5th. Another magnificent day; saw both *Papilio podalirius* and *P. machaon* at Bex; took *Argynnis dia* and *Vanessa c-album*, which was fairly common in the fine beech-woods which were just coming into leaf. *Euchloë cardamines* (males) have been about three or four days, but we did not see a female till May 7th; by the 10th they also were very common. Took *Hesperia alveolus* for the first time. *Vanessa antiopa*, *V. io*, *V. urticae*, *V. polychloros*, are all common everywhere; all hibernated specimens.

May 7th. Very hot; on the side of the mountain, half-way between Lavey and Morcles, some 2500 feet up, we took a solitary specimen of *Pararge hiera* in beautiful condition. At Lavey we also took two *P. podalirius* and an *Argynnis euphrosyne*.

May 9th. This was the day *par excellence* for butterflying. Four of us with nets made an excursion up the Rhone valley, between St. Maurice and Lavey, spreading out in line near the base of the high cliffs, and beating the low-lying and luxuriant meadows which were intersected at intervals by ditches and an occasional small pool. It was an ideal place for our game and we were not disappointed. The *Papilio podalirius* were glorious

and fairly plentiful, as between us we took thirteen specimens in magnificent condition, six of which fell to my net. We also took seven *Pieris daphidice*, and among them two of the rare variety *bellidice*. My bag also included a *Papilio machaon*, four *Argynnis euphrosyne*, several *lutona* (all males), *Syrichthus fritillum*, *Lycæna cyllarus*, besides commoner ones, such as *Nisionades tages*, *Lycæna argiolus*, *L. alsus*, *Nemeobius lucina*, and again all the five above-mentioned *Vanessidæ*. I might mention here, that on May 7th, single specimens of *Colias edusa* and *C. hyale* were taken near Bex, though not by me, and *Vanessa levana* was also captured at Lucens. I did not see *C. hyale* again till May 14th, after which they became common. I never saw *edusa* at all again.

May 10th. This morning, in quick succession, I took three more *Pieris daphidice*, on the bank of a stream close to Bex, also my first *Pararge egeria*.

For the next four days I was close to the level of the snow, and consequently saw but few butterflies, except crowds of *T. rubi*, and *A. dia*, and the *Vanessidæ*.

May 17th. To-day we walked along the Axenstrasse, from Flüelen to Brunnen, on the Lake of Lucerne, and besides having a very lovely walk, found ourselves once more in the midst of the butterflies, taking between ten and twelve o'clock, two *Papilio machaon*, two *P. podalirius*, both these were common, and we could have captured more; an *A. euphrosyne*, four *C. hyale*, a *Carterocephalus palaemon*, the only specimen I have seen, and *Pararge egeria*, besides some commoner species. Unfortunately the Föhn wind rose half-way through the morning, and spoilt what promised to be a very productive day, as no ordinary butterfly could venture out while it was blowing; notwithstanding which *P. podalirius* were still flying, though with extreme difficulty, and offering very easy capture while laboriously beating up against it.

May 18th. In a spare hour in the morning before setting off for home, I went out to try my luck on a marshy bit of ground close to Lake Lucerne, just behind the hotel at Brunnen, and there found quantities of *Melitea aurinia* flying: I saw it nowhere else; and also took here some *Cornonympha pamphilus* and a *P. machaon*. *S. alveolus*, *N. tages*, and *Lycæna minimus* were very abundant at Brunnen.

The last winter was an unusually severe and protracted one in Switzerland, and we were told that the snow had only cleared off Bex three weeks before our arrival; possibly the butterflies were a little later in appearing than usual on this account.

15, Cavendish Square, London, W., June, 1888.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

APORIA CRATEGI.—In view of the recent discussion on the disappearance of *A. crategi* in the south-eastern counties of England, it may be interesting to mention that my son, H. M. Briggs, writing from the South Eastern College, Ramsgate, says, "On June 9th I took an *Aporia crategi* in fine condition."—THOS. H. BRIGGS; Surrey House, Leatherhead, June, 1888.

COLIAS EDUSA IN JUNE.—*Colias edusa* seems to be out unusually early this year. While at Eastbourne I saw a fine specimen near Holywell, on the way to Beachy Head, on 12th June, careering along in its usual headlong fashion. I may add that I took several specimens there in 1885.—R. C. CYRIAX; 33, Douglas Road, Canonbury.

VANESSA ANTIOPA IN ESSEX.—To-day I had the pleasure of seeing a specimen of *Vanessa antiopa*, immediately after its capture by Master Callen, of 4, Matlock Villas, Hoe Street, Walthamstow. It was found at rest on the bole of a tree near 'The Eagle,' Snaresbrook, and is in very fair condition.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex, May 24.

THECLA W-ALBUM IN DERBYSHIRE.—There seems a fair prospect of an unusual abundance of *Thecla w-album*; and those collectors who are in want of it should be on the look-out for the perfect insect towards the end of July. On Wednesday, June 13th, I had the pleasure of taking, in a wood near this place, no less than sixty larvæ of this insect; and a friend who was with me got thirty more. A large proportion of them were nearly full-fed, and had turned brown previous to assuming the pupa-state; but some few were still in the green stage. We found many climbing up the trunks of the trees, principally, of course, on the wych-elms; but several on larch, one on ash, and one on a frond of fern, whither it had probably dropped from an elm

above. They seemed most to favour such trees as were somewhat exposed to the rays of the sun, and especially such as had seed hanging on them; and on one of this kind we took nearly twenty larvæ. A high wind had been blowing the day before, which might partly account for the numbers we found crawling up the trees. All, however, were ascending, not descending. May this be an indication of the fact that they pupate towards the top of the tree?—CHAS. F. THORNEWILL; Burton-on-Trent, June 15.

GYNANDROCHROMOPHIC *LYCÆNA ICARUS*.—I took on June 10th, on the downs near here, a fresh specimen of *Lycæna icarus*. The left wings are the colour of an ordinary female; the right wings have the colour of the male, with the exception of a dark narrow band reaching from the tip to the base of the anterior wing, and a similar band along the upper edge of the posterior wing, with one indistinct red spot. The right antenna is longer than the left. — ALFRED BRAZENOR; Lewes Road, Brighton, June, 1888.

[*Vide Entom. xvi. 172.*—J. T. C.]

SPRING BROOD OF *LYCÆNA ARGIOLOUS*.—I have met with this elegant little butterfly this spring in the utmost profusion in nearly every locality I visited on Ashdown Forest. A few specimens were also noticed at various places close to this village, and on three occasions it was seen flying round a holly-tree in the garden. The earliest date at which I observed them was about May 10th, and they remained on the wing till about June 12th. The species was most abundant at a spot called "Chuck Hatch," where holly plantations are numerous, the hollies in some cases growing to a great height. The immediate surroundings are wild and barren, there being nothing but moorland for miles around, with a solitary wild-crab or a yew-tree dotted here and there. One of my visits to the locality was on May 28th, and the day being very dull not a specimen was to be seen on the wing; however, by beating the bushes with a stout stick, I succeeded in netting a fine series. The sexes appeared to be in equal proportion as to numbers. I noticed that whenever a gleam of sunshine occurred they began immediately to fly lazily round the tops of the hollies, but soon again settled on the sky becoming clouded. Several specimens were discovered at rest on the under side of the leaves, and also amongst the grass

under the bushes. I shall be interested to note whether the second brood is abundant in this locality. The only place in which I have ever seen the August brood of this butterfly in any numbers was last year at Brambletye Castle, near Forest Row, where the ruins are covered with ivy, over which *L. argiolus* was flitting. Hollies, however, were by no means abundant.—W. H. BLABER; Sunnyside, Groombridge, Sussex, June 19, 1888.

SYRICHTHUS MALVÆ var. *TARAS* (LAVATERÆ) AT ST. LEONARDS.—While collecting on the South Eastern Railway bank near St. Leonards, I took a specimen of the above variety of *S. malvæ*. I should be glad to know if any other collectors have met with it this season, and if it is often taken near the south coast. I have netted since several typical *malvæ*, with the hopes of again obtaining the variety, but have been unsuccessful.—J. W. SWEETLOVE; Cragmore, London Road, St. Leonards-on-Sea, June 5, 1888.

DEILEPHILA LIVORNICA AT BELFAST.—On June 7th I had the good fortune to capture a fine, apparently freshly-emerged, specimen of this rare insect; and on the 11th a second specimen was taken by a friend. Both were taken hovering over rhododendron flowers in Ormean Park.—C. W. WATTS; 1, Holborn Terrace, University Street, Belfast, June 20, 1888.

DEILEPHILA LIVORNICA IN SUSSEX.—While collecting in woods at Polegate, on Saturday, June 2nd, I captured a very fine specimen of *D. livornica*, flying over flowers.—A. WARD; 118, Richmond Road, Brighton, June 4, 1888.

LAPHYGMA EXIGUA AT LEWES.—When collecting on the downs in this neighbourhood on the evening of June 4th last, I had the good fortune to capture a specimen of this rare Noctua, which was skipping over the turf. I very nearly overlooked it, thinking it to be a species of *Crambus*; and, when captured, I was not sure of my prize until I showed it to a friend, who at once pronounced it to be *Laphygma exigua*.—W. E. NICHOLSON; Lewes, June 21, 1888.

[This specimen would be hybernated; examine any ivy bloom in neighbourhood in autumn.—J. T. C.]

EUPITHECIA VENOSATA.—In the autumn of 1886, I obtained from Mr. Salvage of Brighton, some pupæ of *Eupithecia venosata*, collected by him in that and earlier stages in Shetland. Some of

these emerged in June of the following year. Very unexpectedly to me—for I had no idea of the moth remaining two years in pupa—I have bred during the present month of May a goodly series of this pretty species. The first emergence on May 2nd was just a month earlier than that of last year. Some of them are extra fine—veritable giants amongst the Pugs. —JOSEPH ANDERSON, Jun. ; Chichester, May 25, 1888.

THE ABUNDANCE OF *PLUSIA GAMMA*.—I do not know whether the abundance of *Plusia gamma* is to be an event of the season. As soon as the leaves began to appear in May I noticed this species in my own little garden. On all mild evenings throughout May *gamma* was present. I saw more than a dozen in Chattenden on May 26th, several at Cuxton on May 28th, and when at Farnborough (Kent), June 2nd and 3rd, I saw several others. There are several every evening in my garden ; last evening I saw five specimens in a few minutes. The specimens I have netted are pale in colour with worn fringes, leading one to surmise that the imago has hibernated. Larvæ were abundant in October (1887), and pupated and emerged (as far as those in confinement were concerned) last year. This would seem to strengthen the idea that they have hibernated. Has anyone found hibernating specimens ?—J. W. TUTT ; Westcombe Park, S.E., June 8, 1888.

SUGARING NEAR TENBY.—During the last week or so I have found my experience coincide with that of your correspondents, as to the advantage of sugaring after rain (Entom. 140). The weather here had for some time remained hot and dry, during which time few moths were to be got, but later on we had several days' rain, after which matters considerably improved, and I succeeded in taking a fair number at sugar ; among them, *Mamestra albicolon*, *Miana strigilis*, *Grammesia trigrammica*, *Agrotis ripæ*, *A. segetum*, *A. exclamationis* (the last two were a perfect pest), *Hadena dentina*, *Acronycta rumicis*, &c. — SPOTSWOOD GRAVES ; Victoria Street, Tenby, June 21, 1888.

GREAT ABUNDANCE OF INSECTS. — During the past fortnight *Plusia gamma* has occurred here in vast numbers. At night they swarm round sycamore bloom in thousands, and in the grass-fields they appear to rise from every bunch of grass. *Vanessa cardui* and *V. atalanta* are out in greater numbers than I have ever noticed before. So far too, I have found moths come to

sugar here very freely. Such common insects as *Agrotis puta*, *A. exclamationis*, &c., cover each patch almost as soon as laid on.—(Major) CHARLES PARTRIDGE; The Castle, Portland, June 10.

[Both *Vanessa cardui* and *Plusia gamma* have been very generally abundant this season. In early June I noticed a great abundance of *V. cardui*, especially on the Essex coast, where *P. gamma* was equally common.—J. T. C.]

ABUNDANCE OF LARVÆ. — On June 9th, on entering a wood near Holmsley, New Forest, our attention was called to the bareness of the foliage on the oak-trees, and as we approached we observed that for a few hundred yards the trunks were completely surrounded with webs, within and on which there were swarms of larvæ of several different species. There were several which we could not determine but amongst others were *Thecla quercus*, *Porthesia auriflua*, *Psilura monacha*, *Phegalia pedaria*, *Hybernica defoliaria*, *H. aurantiaria*, *Cemitobia brumata*, *Oprobria dilutata*, *Asphalia ridens*, *Teniocampa stabilis*, *Catocala sponsa*, &c. The leaves were completely stripped from the boughs, except at the tops of the trees. The larvæ also occurred plentifully, resting on the bracken-fern, and by listening we could hear a distinct rustling of larvæ crawling amongst the dead leaves on the ground. There had been heavy rain a few days previously, and this, besides the want of food, may have driven the larvæ down. On re-visiting the same place a week later there was scarcely a larva to be seen. We should be interested to hear if others have had the same experience.—J. M. ADYE and A. DRUITT; Christchurch, June, 1888.

[There has been in many districts a like abundance this season of lepidopterous larvæ, feeding especially upon oaks. Some parts of Epping Forest, and in Surrey and Kent, trees look as naked as in mid-winter.—ED.].

UNUSUAL PAIRING.—In October last, whilst sugaring in the Forest of Dean, I took a male *Cerastis vaccinii* in copulâ with a female *Miselia oxyacanthæ*. Unfortunately I neglected to preserve the female. Last week I came across a male *Euchloë cardamines* in union with a female *Bapta temerata*; they were bottled together out of the net, and I did not notice anything unusual till I reached home and commenced to pin my captures (*vide* Entom. 158).—N. F. SEARANCE; Mitcheldean, Gloucestershire, June 3, 1888.

THE DIMORPHISM OF PIGMENT.—Mr. Sydney Webb's interesting record of a variety of *Euchloë cardamines*, in which the usual orange tips are replaced by clear yellow (Entom. 132), leads me to refer to the third distinct case of dimorphism of animal pigment which has come under my notice. The first pigment is yellow or red, as seen in *Zygæna*, *Arctia*, &c.; the second, white or yellow, as in *Pieris*, *Rumia*, &c.; and the third is well illustrated by Mr. Webb's variety, having the two forms—orange and yellow—yellow being, as in the other two cases, probably the primitive one. In the North American species of *Colias* this dimorphism is very plainly seen. *C. philodice* of the Eastern States is yellow, but has its representative further west in the orange *C. eurythema*, which, nevertheless, shows a tendency to yellow in its forms *ariadne*, Edw., *keewaydin*, Edw., and *intermedia* (n. var.), and has the orange wholly replaced by yellow in the forms *eriphyle*, Edw., and *autumnalis* (n. var.). For the variety of *Euchloë* (or *Anthocharis*) *cardamines*, in which the orange is replaced by clear yellow, the name *aureoflavescens* may be used, as for any other atavisms of this nature.—T. D. A. COCKERELL; West Cliff, Colorado, May 21.

BOTANICAL DRYING PAPER.—As all entomologists should also be botanists, it is not out of place to call attention in these pages to Newman's Botanical Drying Paper, which is specially manufactured for preserving botanical specimens. The new thick kind is very useful, and has the advantage of practically lasting for always. It is far better to use this paper than more ordinary sorts, because with this and the smallest care "black plants" may be avoided, while the true colours of the flowers will be preserved.—ED.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 6th*, 1888.—Dr. D. Sharp, F.L.S., President, in the chair. Mr. George Meyer Darcis, of 32, Central Hill, Upper Norwood, was elected a Fellow of the Society. Mr. Pascoe brought for exhibition a book of fine plates of Mantidæ, drawn by Prof. Westwood, which it had been hoped would have been published by the Ray Society. Mr. E. Saunders exhibited a species of Hemiptera, *Monanthia*

angustata, H.-S., new to Britain, which he had captured by sweeping, near Cisbury, Worthing. The insect is rather closely allied to the common *Monanthia cardui*, L. Mr. M'Lachlan exhibited a species of Halticidæ, which had been sent him by Mr. D. Morris, Assistant Director of the Royal Gardens, Kew, who had received them from Mr. J. H. Hart, of the Botanic Gardens, Trinidad, with a note to the effect that they had attacked young tobacco and egg-plants badly in that island. Mr. Jacoby had, with some reserve, given as his opinion that it might possibly turn out to be *Epitrix fuscata*, Duv., a species which had been described from Cuba. The Rev. H. S. Gorham exhibited a number of beetles lately captured in Brittany, including *Diachromus germanus*, L., *Onthophagus taurus*, L., *Hister sinuatus*, Ill., and other species which are exceedingly rare, or altogether wanting in Britain, and yet occur very commonly in the North of France. Mr. Enock exhibited specimens of the Hessian Fly, bred by himself, and mounted for the microscope. Mr. White exhibited living larvæ of *Endromis versicolora*, and remarked that when quite young they are nearly black, owing to being very thickly spotted with that colour; the body-colour is green, and after the second change of skin the spots disappear. Mr. White also exhibited two preserved larvæ of *Phorodesma smaragdaria*, which he had recently taken, and made some remarks concerning the so-called "case" which this insect is said to construct from the leaves of its food-plant, *Artemisia maritima*. This he did not consider to be really a case, but he had discovered that the larva possessed on its segments certain secretory glands, at the apex of each of which there is a bristly hair; this appears to retain pieces of the plant, which are probably fixed firmly afterwards by means of the secreted fluid. These pieces are very irregularly distributed, and their purpose is evidently protective. Mr. Lewis exhibited about three hundred specimens of the genera *Heterius*, Er., and *Eretmotus*, Mars. The most remarkable of these was *Heterius acutangulus*, Lewis, discovered last year by Mr. J. J. Walker near Tangier, and were recently taken by him at S. Roche, in Spain. The names of the other species exhibited are:—*Heterius bedeli*, Lewis, *H. punctulatus*, Lucas, *H. cosmo-sellus*, Fairmaire, *H. pluristriatus*, Fairmaire, *H. setulosus*, Reitter, *Eretmotus sociator*, Fairmaire, from Algeria. *Heterius acutan-*

gulus, Lewis, *H. arachnoides*, Fairmaire, *H.* —, n. sp., *Eretmotus tangerianus*, Marseul, from Morocco. *Heterius hispanicus*, Rosenb., *H. marseuli*, Brisout, *Eretmotus ibericus*, Brisout, from Spain. *Heterius ferrugineus*, Oliv., from France.—W. W. FOWLER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 24th*, 1888.—T. R. Billups, F.E.S., President, in the chair. Messrs. A. H. Japp, L. Stevens, and J. C. Mathews were elected members. Mr. Jäger exhibited a larva of *Nemeophila plantaginis*, which he had found dying, partially covered with mould; on examination he had noticed a small larva (also exhibited) emerging from the caterpillar. Mr. West stated that the larva which Mr. Jäger had found emerging from the *plantaginis* larva was that of the hair-worm, the ova of which had probably been swallowed by the larva of *plantaginis* while feeding. Mr. Helps showed *Dianthæcia capsicola*, bred from larvæ obtained in Norfolk. Mr. R. Adkin, a fine series of *Asphalia ridens*, bred from pupæ received from the New Forest; the specimens showed a considerable amount of variation, some of the females being very white. Mr. T. R. Billups, specimens of *Bracon brevicornis*, parasitic on *Ephestia kukniella*, and said that Mr. Marshall once reared the female from the galls of *Andricus terminalis*; Mr. W. F. Kirby had bred six males and one female from *Ephestia elutella*, Herr Brischke obtained a male from *Dioryctria abietella*, while Mr. S. Webb, of Dover, had bred a male from *Myelois ceratonix*. Mr. Fenn read a paper on "British Land and Freshwater Mollusca," which was followed by a discussion upon variation, Messrs. Tugwell, Rice, Carrington, Step, Tutt, South, and others taking part.

June 14th, 1888.—John T. Carrington, F.L.S., Vice-President, in the chair. Mr. Robinson exhibited ringed forms of the larva of *Trichiura cratægi* from Monkswood, and asked whether it was a common variety of the larva. Mr. Tugwell said he had never met with this particular form, although in his experience the larva of this species varied considerably. Mr. Lowrey, a male *Tæniocampa stabilis*, taken in copulâ with a female *T. gothica*, and remarked that ova were obtained, of which only a few hatched; the larvæ eventually died. Mr. West, of Streatham, a specimen of a moth reared from a larva found in Switzerland, and which was identified as *Acronyeta leporina*; also a larva

obtained on breaking up some tea-chests from China, with pieces of the wood, showing the way the chests had been riddled by these larvæ. Mr. Slater said the larva in question was probably that of a species of Buprestidæ. Mr. R. Adkin, specimens of *Cnephasia musculana*, *Eriopsela fractifasciana*, *Phoxopteryx comptana*, *Eupæcilia ciliella*, taken at the Society's excursion to Horsley on May 26th, and remarked that in his experience the present season was even later than in 1887. The Secretary read a communication from Mr. T. D. A. Cockerell, referring to a note by Mr. Frohawk, in the 'Field' (1887, p. 828), as to his having taken a white-banded example of *Sesia culiciformis* at West Wickham. Mr. Cockerell writes that he had hitherto always classed the bands of the Sesiidæ with the hind wings, &c., of *Arctia*, *Zygæna*, &c., as exhibiting a pigment common to all which was dimorphic, the two forms being yellow and red; some species of *Sesia* have yellow and some red bands, and occasionally a normally red-banded species would have the bands yellow, but that it should vary to white was quite unexpected and unknown to him; he would, therefore, ask whether white-banded *Sesia* were known to any of the members, and was the specimen referred to by Mr. Frohawk known anything of? Messrs. Hall, Tutt, Williams, and others said that in their experience they had never met with any white-banded forms of this species; and a discussion ensued. Mr. Tutt read an article by Mr. Cockerell from the 'Canadian Entomologist' for May, "On the nature of seasonal dimorphism in Rhopalocera"; and discussion took place. Mr. J. T. Williams mentioned that in the neighbourhood of Foots Cray, Kent, the larvæ of *Bombyx neustria* were unusually abundant; also that he had noticed a number of hibernated specimens of *Vanessa cardui*. Mr. Carrington and Mr. Tutt also recorded the appearance of specimens of *V. cardui*, and referred to the large number of hibernated *Plusia gamma* noticed in different districts. On Saturday, June 23rd, a large number of members and their friends were conducted by Mr. Carrington over St. George's Hills, as described in "Localities for Beginners," No. X. (Entom. xix. 226), and by the Guildford Road to the Hut Pond, returning to the 'Hand and Spear' Hotel, Weybridge, to tea in the late evening. A most enjoyable afternoon was spent, and several rare insects captured.—H. W. BARKER, *Hon. Sec.*

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LASIOPTERA CEREALIS, LINDEMAN.

BY PETER INCHBALD, F.L.S., AND R. H. MEADE, M.D.

AT the close of May I succeeded in rearing the Cecid that is so destructive to the crops of rye in the broad corn-tracts of Russia. The pupæ were sent by Professor Lindeman to Miss E. A. Ormerod, and to Professor Riley, of Washington, United States. Miss Ormerod most kindly shared with me the culms sent to her. The rosy larva, when full fed, pupates either within the culm, or under the sheathing leaves of the rye-plant, spinning a slight flossy web as its temporary home. In this web it awaits its next change, which, as I said, occurs at the end of May and the early part of June. Its home is easily recognised by the partial blackening of the culm or sheathing leaves, which thus give external evidence of the tenant within.

The first gnat appeared about the 25th of May, and a beautiful fly it is, certainly the most beautiful of the Cecidomyiidae I have yet reared. The flecks and snow-white bars on the black ground-colour of the gnat, give an especial character to the otherwise sober nature of its dress. I reared about half-a-dozen examples in all, but they were mostly females. They will live, after emerging, for three or four days, if supplied with moisture. They are more sluggish in their movements than are Cecids generally, so that a fair opportunity is afforded of noticing their magpie-colouring and their habits of life.

I have very much pleasure in subjoining a diagnosis of the *Lasioptera cerealis*, from the pen of the original discoverer,

Dr. Ch. Lindeman, Professor at the Imperial Academy of Agriculture, Moscow, Russia. He writes to me as follows:—

“I received the letter you have been good enough to send me, and I hasten to furnish you with an extract of my article on the *Lasioptera cerealis*, which appeared in 1881, in the ‘Bulletin de la Société Impériale des Naturalistes de Moscou...’ The fly is $2\frac{1}{2}$ mm. in size. The body is black. The sides of the thorax, the under side of the abdomen and of the head, as also of the oviduct, are blood-red (after death and in the case of full-grown examples black). Closely-set, silver-white scales show regular and very characteristic spots and bands on various parts of the body, especially on the following:—A large white spot on the scutel, another on the sides of the thorax, above the fore coxæ. Seven small cross-bands on the abdomen, upon the hind margins of the segments; these transverse bands are smaller above than underneath, and in the middle they either diminish in size, or are altogether interrupted. The trochanters, the knees, and the under-tips of the tibiæ are also furnished with clear white scales (*beschuppt*). The poisers are white. The fore-border of the wings, their tips, and the outer half of the hind margin, are broadly bordered with black. At the base of the fore-margin a white spot is found; another white spot sits like a stigma on the fore-border of the wing, in the middle thereof. The wings are incumbent, iridescent, ciliated on the hind margin, and with forked marginal veins. The antennæ are short and thick, with round hairy joints. Proboscis short, not prominent. Palpi long, bent hookwise (*hakenformig*) behind. Metatarsus much shorter than the following limb. The male is slightly distinguished from the female by the size of the spot and the black border of the wing.

“Professor Riley, at Washington, and Dr. J. Ritzema Bos, at Wageningen, have likewise succeeded in raising the gnat from larvæ with which I supplied them.”

Dr. Meade has also kindly supplemented Dr. Lindeman’s diagnosis by a microscopic description of *L. cerealis* from living examples, and most heartily do I accept his welcome offer to give it, which will be fully appreciated by naturalists both at home and abroad.

PETER INCHBALD.

LASIOPTERA, Meigen.

This genus contains some of the most elegant, but least-known species in the family of *Cecidomyiidae*. They are characterised by having the two first longitudinal veins of the wings placed near together, and close to the costa, where they are covered with black scale-like hairs; a white spot is also often placed in the site of the stigma. No vein crosses the middle of the wing, but the posterior or anal vein is present, and forked much in the same manner as in the genera *Cecidomyia* and *Diplosis*. Their bodies are very prettily variegated with patches and stripes of white, yellow, or black scales, which are very easily abraded.

The antennæ are peculiar; as in other Cecids they are moniliform, consisting of a number of subglobose joints which are sessile in both sexes; often somewhat flattened and compressed together (especially in the females), and verticillated with short hairs. The particular point about them, however, by which the Lasiopteræ differ from almost all the other Cecids is, that they are usually (if not always) shorter, and composed of fewer joints in the male than in the female. This fact seems to have been imperfectly known, and therefore indistinctly described by almost all systematic writers. Meigen, the founder of the genus, says that the antennæ are many-jointed, and the number of joints varies in different species, but he does not mention the difference between them in the two sexes. Macquart, Zetterstedt, Walker, Schiner, Van der Wulp, Osten-Sacken, &c., none of them give a distinct account of the difference between the male and female antennæ. Winnertz is the only author who has thrown much light upon the subject, and he does not distinctly state that the antennæ are *shorter* in the male than in the female, but says that they are from 12- to 24-jointed, and then refers to the figures in his 4th plate, in which he gives a very accurate delineation of an antenna of both sexes of *L. rubi*, in which he makes that of the male one-third shorter than that of the female, and consisting of seventeen joints, while there are twenty-three joints in that of the female. In his description of the different species he also states that the females have more numerous-jointed antennæ than the males in all those of which he knew both sexes.

The Lasiopterae have similar habits with the other Cecids. Their larvæ mostly live in the woody stems of shrubs, or in the haulms of reeds and grasses, in which they often form gall-like swellings, such as those so well figured by Reaumur,* caused by *L. rubi* on the bramble.

L. CEREALIS, Lndm.

Nigra, squamis pilisque albis variegata. Thorax nitidus, lateribus rufis. Scutellum apice testaceum. Halteres petiolis rufis, clavisque albido-squamatis. Abdomen albo cinctum. Alæ maculis duabus niveis margine superiore signatæ. Pedes atri, nigro-alboque villosi. Antennæ 17-articulatæ in ♂, 23-articulatæ in ♀. Long. 3 mm.

Head small and round; eyes contiguous above in both sexes; palpi long, 4-jointed, two basal joints short, thick, and black, third and fourth joints yellow, the third longer than the two first together, and the fourth twice as long as the third, antennæ reddish brown, becoming lighter towards the end; those of the female are about as long as the head and thorax together, composed of twenty-three short, compressed cylinders, which become gradually smaller towards the apex, which is conical; those of the male are about one-third shorter than those of the female, and more slender, formed by seventeen joints of a more globular form and less closely pressed together than in the opposite sex; they are furnished with whorls of short hairs, both in male and female.†

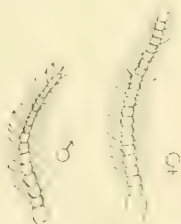
Thorax shining black, furnished with some scattered fine white hairs which are most easily detached; the sides and roots of the wings are red; a silvery white patch of white hairs or rather scales, is seated on the side above the fore coxæ.

Scutellum black, with the apex tinged with red, and with a patch of white hairs at the base. *Abdomen* dark brown above and red beneath; the lower margins of the segments are furnished with transverse bands of white scales, forming in the female two small lunular-shaped patches (with the convex side upwards) upon each ring, which meet or approximate only, in the

* Vol iii., Pl. 36, fig. 1.

† The antennæ of this species so closely resemble those of *L. rubi*, which are figured by Winnertz (both in shape and number of joints), that I have inserted a copy of his engraving. Plate 4, figs. 13 and 14.

centre. These white bands are straighter in the male. The oviduct was either broken off or entirely retracted in the female specimen which I examined. The male caudal organs are small and may be thus described :—The end of the abdomen is rather thick and rounded, the forceps with the enclosed parts are attached to the under side of the extremity, and turn a little upwards; on the upper surface of the end of the abdomen two little nipple-shaped hairy bodies project in front and above the caudal organs. When viewed from above, the forceps appear to have two thick flattened and twisted arms, each supporting a sharp inverted claw. Between the roots of the forceps a triangular process is seated, which terminates in two elongated style-like bodies placed close together, which reach to within a short distance of the ends of the arms of the forceps. When viewed from the under surface, the style-like bodies appear to be covered with a loose flap-like process which hides them (see fig.).



Antennæ of *L. cerealis*,
male and female (Dr.
Meade).



Caudal organs of male
L. cerealis (Dr. Meade).

Wings. The costa, together with the approximated first and second longitudinal veins, are coated with black scales; one white spot is placed at the root of the wing under the black margin, and a second at the point of termination of the second vein in the costa. The hind margin of the wing is ciliated with black hairs, and the edge of the wing itself is also a little thickened (with black scales) for a short distance from the root forwards.

Legs dull black, being more or less clothed with minute black scales, knees tawny when these are abraded. The coxæ, knees, and under sides of the ends of the tibiæ are ornamented with patches of pure white scales. The first joints of the tarsi (metatarsus) are very short, as in the genus *Cecidomyia*.

R. H. MEADE.

VARIATION OF CERTAIN AGROTIDÆ.

BY J. W. TUTT, F.E.S.

(Concluded from p. 176.)

Now with regard to *cursoria*. A well-developed local form of this "non pale-costa" part of the group is obtainable on many parts of the coast, which seems at first sight sufficiently distinct to call a species; but this form is in itself very inconstant. It is distinct in itself, but has a great number of local races and forms; and since our correspondents send us picked insects which they themselves are able to distinguish as belonging to *cursoria* and not to the allied *tritici*, it is difficult to say how reliable the forms are, or whether, if one obtained an immense series of *tritici* and *cursoria* from the same districts, they would exhibit the same distinctness they certainly appear to do. To return, the Lancashire specimens have generally, in the "non pale-costa" type, a well-developed dark mark in the lower half of the reniform. This seems to be there a most constant character, but I have *tritici* from Deal with this same character well developed, and some undoubted *cursoria* forms are without it. From Sligo, where my kind friend Mr. Percy Russ gets *cursoria* perhaps more abundantly than any other collector, I have a long series, but no trace of this special development except in two specimens, and then only slightly; neither does there appear to be this development among the *cursoria* from the Welsh coast. On the Scotch coast some marvellous specimens are obtainable, characteristic ochreous *cursoria* leading up to perfectly melanic forms. To me a very strange and important problem presents itself: Why is it that in all these localities none of the magnificent forms—white, slate-colour, black *cursoria*-like forms—of *tritici* are present? I am assured by collectors from these localities, that the great mass of variation of the forms without pale costæ that I get at Deal is not obtainable in their localities; and when Mr. Percy Russ looked over my collection a few weeks ago, with all his experience he said he had never met with such forms, and I think he gave up altogether the attempt to solve the problem which species many of my specimens represented. But now comes another important matter. *Cursoria* is looked upon as an insect without a pale costa, but I have seen some splendid varieties from Sligo,

the Lancashire and Cheshire coasts, the Welsh coasts and other localities, with splendidly developed pale costæ and all the characteristic longitudinal markings of *tritici*, and without or almost without any transverse markings. This creates another difficulty, and only the most practised eye can distinguish some of these and correctly refer them to their right group. I will not go so far as to say that in some instances they cannot be named, but, with the exception of some half-dozen of our oldest entomologists who have given this matter special attention, I doubt whether they would be distinguished. But although there is so much to increase the difficulty of determination, yet I do not for one moment believe that *cursoria* and *tritici* are specifically identical in the same way as are *tritici* and *aquilina*. My Kent specimens are purely and simply *cursoria*-like varieties of *tritici*, and I do not believe that *cursoria* occurs in that part of the Kent coast from which so many cabinets have been supplied. Many lepidopterists have said to me, "Oh, I never have any trouble to distinguish *cursoria*," or statements to that effect. I generally answer, "I suppose not"; but my feelings of admiration for the gentlemen may be better imagined than described. A few years ago I should have wondered whether anything was wrong with any individual who had suggested that I could not distinguish *cursoria*. I have learned better since. A series in a cabinet is a grand study; an illimitable series in a state of nature, however, is a vastly grander one. It is really marvellous to me how, in the one species *tritici*, all the characters of all the allied species are developed in special forms, and how these lead up to their respective extreme forms of development, which have at last become distinct, or, as we call them, species.

It has been pointed out to me that *cursoria* is a differently shaped insect to *tritici*. My answer is that in this group shape is nothing. I have some remarkable forms of *tritici* with the wings almost as broad as they are long, others with wings long and exceedingly slender. Normal well-developed *tritici* differ but little in shape from well-developed normal *cursoria*; but one factor in favour of considering *cursoria* distinct, is the fact that at Sligo the wings are always well developed and ample, while it is unusual to find a specimen of the various varieties of *tritici* which is not exceedingly small and undersized. It may be that the *cursoria* are more suited to their environment, but there is

no difficulty to distinguish the *cursoria* forms from *tritici* taken on the same ground; but there is great difficulty to distinguish *cursoria* from Sligo from certain forms of *tritici* captured at Deal.

We have now to consider another species—*obelisca*. Until I obtained continental specimens and studied continental authors, I must own I did not know what the species was. I had, as most lepidopterists I suppose have, specimens which had been obtained by exchange, and which my correspondents undoubtedly believed were the species they represented them to be. As those lepidopterists who believe they get the species must supply those that know they do not, there must be, I am afraid, a strange lot of *obelisca* in some cabinets. By some occult method of reasoning on the part of my correspondents, nearly all the *obelisca* I got were black (although the type is reddish brown), and with one exception (two specimens which came from Paisley) were *tritici* pure and simple, in a few cases worn until their specific rank was a little dubious, in others exceptionally dark, but undoubtedly *tritici*. With regard to *obelisca*, I feel dubious whether we get any extreme forms of the redder or paler type. The Isle of Wight specimens do not seem to have occurred at all freely of late years, and the only ones that are generally abundant are the dark ones from Scotland. It does not seem to be generally known how exceedingly pale the continental specimens of *obelisca* are, in their palest forms leading up to the var. *hastifera*, Donz., of mountainous districts, which is of a distinctly vinous-black coloration. It is because this insect is, compared with its congeners, rare in Britain, that one is unable to express the same certainty with regard to it. My own series numbers less than thirty undoubted British specimens, a number altogether inadequate to form any opinion of its extent of variation. The continental forms help one, however, to get a better idea of its affinities. Mr. Percy Russ has captured in Sligo some fine forms of *cursoria* bearing a great superficial resemblance to var. *villiersii*, Hb., but undoubtedly distinct from that variety and to be referred to *cursoria*. The specimens which we obtain from the South of Scotland are undistinguishable from specimens of var. *hastifera* which I have from various German localities, but some of these are very close to dark vars. of *tritici*, although a well-trained eye readily distinguishes between them. There is another variety, var. *ruris*, about which there is a great deal of difficulty in my

mind. Some specimens of this variety, which came through a well-known lepidopterist into my hands, from Dr. Staudinger, are altogether unlike all my previous thought of what *obelisca* ought to be, and altogether unlike the type of *ruris*, Hb., fig. 416, which is a streaked form. They are like some of my specimens of *tritici* which I called *cursoria*-like, i.e., they are without the pale costa, without the pale longitudinal markings; in fact, they bring us back to the root of the matter again, viz., that *tritici* and *obelisca* have *cursoria*-like forms, whilst *cursoria* has the streaked *tritici*-like forms, and that these varieties run in their extreme forms into each other so much, that it is only by training the eye specially that there is any real difference to be detected between any one of the species and the allied ones (if they can be considered as species); for the members of the whole group are so closely interwoven one with the other, that it is most difficult to tell where one ends and the other begins. However, I have tried to explain some of the difficulties of this difficult group without giving, except in the case of *aquilina*, and this, I think, is almost generally admitted now, any undue prominence to my own opinions.

Before concluding I may state what my opinions are:—

1. I firmly believe, and consider it impossible of contradiction which can be proved, that *aquilina* is a pretty generally distributed variety of *tritici* which has never become localised, and which freely interbreeds with typical *tritici*, and is therefore altogether, on any ground whatever, unentitled to rank as a species.

2. That *cursoria* is also an extreme development of a particular form of *tritici*, which has become specially modified and constant within certain limits, that the specimens breed *inter se*, although it is not known whether *cursoria* copulates with *tritici* when occupying the same ground. I am inclined to believe that it does not, and that it is what Dr. Staudinger would call a Darwinian species.

3. That *obelisca* is a still more highly specialised form, and that its constancy in Britain may be either a proof of its more complete development, or owing to its greater rarity, a proof of our ignorance in not knowing the different forms of variation through which it may extend.

I have had even good lepidopterists ask me how it is that

since I can frequently determine even dubious specimens of these forms, I can suppose they are not distinct. To such I simply answer that I can discriminate much more readily a pale and black (var. *nigrocornutus*) *segetum*; am I to consider that these *Agrotis* vars. are therefore more distinct? The varieties of *Apamea didyma* are more easily separable than the varieties of *cursoria* from those of *tritici*; the fact, therefore, of being generally able to distinguish them is of no value, although the very fact of the difficulty of separation is sufficient to make us doubt their distinctness. Very few would attempt to devote the time I have to the matter, and I must own that the more I learn about *Agrotis tritici* and its congeners, the more remains for me to learn, and I still find that the old proverb is as true as ever, that "A little wisdom is a dangerous thing."

The editor of 'The Entomologist' having kindly promised to print this in the July and August numbers of that magazine, may I ask the readers of these notes who are at work on the coast, to publish their experience this season with regard to the relation between *tritici* on the one hand, and *cursoria* and *obelisca* on the other? The Lancashire coast, Welsh coast, Aberdeen coast, Isle of Wight, all have good resident collectors, who could, by an exchange of views, make the most difficult problem we have in our study somewhat clearer than it is at present. I trust they will endeavour to do so.

Westcombe Park, S.E.

PARASITES OF THE HESSIAN FLY.

By FRED. ENOCK, F.E.S.

LAST year I had the pleasure of breeding a large number of parasites of the Hessian fly (*Cecidomyia destructor*, Say), from puparia which I collected in various barley-fields; four of these appeared to me to agree in every respect with Professor Riley's description of *Merisus destructor*, Say, which, though recorded as both American and European, had not been identified as occurring in Great Britain. During the month of June I have bred a very large number of parasites, the greatest number being similar in form, colour, and markings to *M. destructor*, my opinion that it was this species being strengthened by that of Dr. Chas. Lindeman, of Moscow, who had written to Miss E. A. Ormerod, that "along

with these Russian species I find an example of what I am inclined to consider to be the American *M. destructor*."

I sent specimens (alive) of males and females to this able entomologist, and have just received his reply, in which he fully confirms my opinion, and writes:—"The specimens of parasites sent, bred in England from the Hessian fly, seem to me to be *Merisus destructor* of Riley; they differ from the typical specimens of my *M. intermedius* by the more compressed and broader shape of the body in the female, by their less intense green lustre, and by the brown or nearly black antennæ of the male." I have also bred several specimens of another parasite, which I am inclined to think will prove to be the American *Platygaster herrickii* of Riley.

June 28th, I found the larvæ of the Hessian fly nearly full grown, the stem of the barley being much weakened. June 2nd, I watched a female "fly" ovipositing; the number of eggs laid was 158; and as this damp and muggy weather is particularly favourable for the development of "the pest," no doubt there will be, in the course of a month or so, numerous reports from all parts of the country.

Up to the present date, I have bred the following parasites from puparia which I collected last autumn, viz.:—*Merisus destructor*, Riley; *M. (Homoporus) subapterus*, Riley; *M. intermedius*, Lindeman; *Tetrastichus* —— ? sp. (2 species); *Semiotellus nigripes*, Lindeman; *Eupelmus karschii*, Lindeman; *Euryscapus saltator*, Lindeman; *Platygaster minutus*, Lindeman; *P. (?) herrickii*, Riley.

11, Parolles Road, Upper Holloway, N., June 30, 1888.

HIGH FLAT-SETTING.

MR. CANT advocates our all taking to continental setting (Entom. 169). Before doing so let us examine a little more closely the supposed advantages to be derived from it. These are said to be:—

1st. "Facility of examination and study."—This may perhaps be granted to a certain extent, as far as the flat surface of the wings is concerned; but this is counterbalanced by the difficulty in examining any under side with a strong lens, when there is a

projection of an inch or more of pin intervening. English entomologists have shown themselves able to study their captures to very good purpose in the past, the drooping wings notwithstanding.

2nd. "Preservation of specimens."—Do mites hop? If they do, it may be a good plan to perch insects an inch or more off the bottom of the drawer; but then, to be logical, they should also be placed that distance apart every way, at which rate we should want about three cabinets to every one now in use, and all our boxes made deeper. If mites do not hop, and a space of a quarter of an inch between each insect is considered sufficient, why will not that space clear from the bottom of the drawer do also? No collector now sets his insects so that their wings shall touch the drawer, yet this setting higher up on the ordinary pins Mr. Cant stigmatises as "an unsuccessful attempt at the continental style." I have seen foreign collections quite as badly infested with mites as any English one, notwithstanding their length of pin.

3rd. "Uniformity."—This is by no means such a desideratum that more important points should be sacrificed to it, but I fail to see how it would be furthered by the introduction of a system known to be unpopular in England, and therefore only likely to be taken up by a small proportion of collectors, whose insects would be almost useless to the remainder, and *vice versa*. Besides, all fairly good British collections have quite a uniform appearance, and the insects are infinitely more graceful and natural-looking than continental ones, for most of the uniformity in a foreign collection is produced by setting the insects with the inner margins of fore wings in a straight line at right angles with the body,—this regardless of markings or shape of wings,—thus making the naturally graceful outline of a butterfly as angular and ungraceful as is possible. This alone, to anyone with an artistic eye, would prove an insuperable objection.

The upshot of the matter seems to be this,—that it is no disadvantage to set on *flat* boards (for the slight after-droop of the wings will take off from the stiffness), provided that the usual English setting in all other points be adhered to. Very nice flat boards can be had of Marsden, of Gloucester, at the ordinary prices, the groove being of sufficient depth, nearly $\frac{3}{8}$ in. in a $2\frac{1}{2}$ in. board, to allow of the insect being well off the bottom of the drawer when placed in the cabinet. The fault of the usual oval boards is that dealers will not meet the demand for a deeper groove, and you

must either cut it down yourself or have your boards specially made for you; hence the difference in height up the pin Mr. Cant complains of. I always have my groove deepened in a V shape, and have found the shape answer very well. I hope some of the leading entomologists will give us their views on this most important subject.

K. M. HINCHLIFF.

Instow, Devon, July, 1888.

For some time I have been most dissatisfied both with my own setting and that of my correspondents, and at the commencement of this season finally determined to abandon concave for flat-setting, and am therefore pleased to see this matter brought before our notice, and the latter style advocated (Entom. 169). Although personally I prefer the flat-setting, and like the insects set tolerably high on the pin, I must confess that the length of pin between the thorax and pin-head, supposed to be necessary in high-setting, takes away half the beauty of a well-set collection, as one cannot see the insects with any distinction through an army of pins, and if these be gilt this is no easy matter. It is much preferable to use shorter and stiffer pins, which do not bend nearly so easily as the long thin ones, and set the insects nearly at the top of the pin; this is quite high enough for all practical purposes, and the insects can easily be moved by the use of forceps. If the pins be black they are scarcely visible, and the result is most satisfactory.

There is one great advantage in flat-setting that Mr. Cant does not mention in his article on this subject, viz., that really good insects, which are only taken very occasionally, are rarely set in the English fashion on just the same pitched board, and thus, when a series is at last obtained, the insects, as a rule, have differently concaved surfaces, which gives a disappointingly uneven appearance. Again, if we have all our boards of one size filled up with several species and have to set the remainder on larger boards, the result is that the latter have a much flatter surface than the former, and we find our series consists of specimens with wings of different concavity, which is very discouraging. Now with flat-setting all this is avoided. If a series be partly set on one sized board and the remainder on another the result is the same, as there can only be one shape in

a flat board; whereas in the English method hardly any two boards have the same pitch, and hardly two entomologists use the same curve. As far as the smaller Geometers are concerned it is impossible to set them to look well unless flat, as they have such a tendency to droop, and when set on a curved surface and low down on the pin, their wings invariably touch the surface of the paper, and they are then subjects for mites.

Might I suggest that if flat-setting becomes of more universal use, it would be a good plan for those who avail themselves of the exchange column in this magazine to state which style they prefer, the flat or concave setting, so that a distinction might be made in that column for the convenience and satisfaction of both parties.

A. E. HALL.

Norbury, Sheffield, July, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

BY J. W. TUTT, F.E.S.

(Continued from p. 181.)

Senta, St., *maritima*, Tausch.

The type of this species is of a silky grey colour, with the stigmata pale but scarcely discernible, a faint row of black dots in place of the angulated transverse line. Hind wings pure white, with a faint trace of a row of black dots on the nervures.

α. var. *ulvæ*, Hb.—All Hübner's figures are more or less reddish. As this is not at all usual, it is, perhaps, advisable to keep Hübner's as a varietal name. His figure 666 is the most marked form, and may be described as:—A male with anterior wings all reddish, except the costa which is dark grey; the stigmata lined in with white. A row of tiny black dots occurs just within the fringe, then a dark shade parallel to the hind margin, then the usual transverse row of black dots between this and the reniform. Hind wings white, with a lunule and an indistinct row of dots on the nervures.

β. var. *bipunctata*, Haw.—Anterior wings with two black spots, one near the centre of the wing, the other beyond the centre. This variety is figured in Newman's 'British Moths,'

p. 268, fig. 3. Guenée writes:—"The two ordinary stigmata and a small spot which precedes them of a deep black" ('Noctuelles,' vol. v., p. 99).

γ. var. *wismariensis*, Schmidt.—Anterior wings with a broad black stripe running from the base to the hind margin. This is Guenée's var. A, which he describes as having "a broad black band traversing the middle of the wing from the base to the apex." (Guenée's 'Noctuelles,' v. p. 99).

δ. var. *nigricostata*, Stdgr.—This is described by Dr. Staudinger as having the anterior wings with the costa broadly black.

ε. var. *nigrostriata*, Stdgr.—Anterior wings with many black streaks running parallel to the veins. This is figured in Newman's 'British Moths,' p. 68, fig. 4.

All these varieties are obtainable in their British localities, the Fen district and Kent.

Chortodes extrema, Hb. (*bondii* Knaggs).

That Hübner's fig. 412 (*extrema*) is the type of this species there appears but little doubt. It is not surprising that it was referred by the continental entomologists, Treitschke, Ochsenheimer, Duponchel, &c., either to *fluxa* (a variety of *fulva*) as an aberration, or treated as a distinct but unknown species, as *bondii* was unknown to continental lepidopterists until a comparatively recent date, when the British specimens were sent over. Dr. Staudinger refers to Hübner's fig. 412 as an aberration of Guenée's *concolor*, which itself has no claim as a species. Hübner's fig. 412 may be described as:—"Wings about the same shape as *bondii*. All the wings white, shaded to ochreous on the outer margins; nervures slightly darker on outer edge. Upper part of fringe to anterior wings black, remaining fringes grey." The black in the fringe is unknown in any species of the group *Leucanidæ*.

Var. *bondii* Knaggs.—First described in the 'Transactions of the Entomological Society of London,' 1861, p. 133. Also figured and described by Newman in his 'British Moths,' p. 276. Our British *bondii* have no trace of the black fringe mentioned above, but this is the only point of difference between *bondii* and Hübner's *extrema*. A sexual variation occurs, the males generally having a distinct transverse row of dots, the females with this

row almost or entirely absent. *Bondii* is only taken, as far as is known, in England and Greece.

Chortodes arcuosa, Haw.

The type of this species is described in Haworth's 'Lepidoptera Britannica,' p. 260, as:—"alis sordide albo-lutescentibus strigis duabus punctorum minutissimorum fuscorum." "Corpus gracilius fere omnium hujus generis. Costa anticarum punctis ordinariis fuscis, ultimo horum majore juxta apicem. Striga prima recta ante, secunda arcuata pone medium, et inter has strigas in medio alæ punctum solitarium fuscum. Cilia pallida. Posticæ ciliaque fuscescentia." There is a great sexual difference, the female having been described by Haworth as a distinct species, under the name of *minima* ('Lepidoptera Britannica,' p. 216, No. 153), as follows:—"alis rufo-cinereis, maculis duabus ordinariis strigisque tribus pallidioribus"; "ciliis cinereis. Posticæ fusæ, ciliis albis." There seems to be but little variation in the specimens of the same sex. Of *airæ*, Fr., ii. pl. 162. figs. 1—3, Dr. Staudinger says, "nimis variegata."

Cænobia, Stphs., *rufa*, Haw.

Haworth's *rufa* ('Lepidoptera Britannica,' p. 260) is the type of this species. Haworth's description is:—"Alis oblongis ciliisque rufis unicoloribus posticis ciliisque pallidis striga medio macularum obscurarum." "Caput inter antennis album." This last phrase is very significant and is clearly shown in some specimens. Geyer, in his supplement to Hübner's Schmett., gives a good figure of the type (fig. 751) under the name of *despecta*. This delicate little species is subject to a great deal of variation in ground colour. I took a very long series last summer (1887), and found every gradation in colour, from a very deep reddish, to an exceedingly pale greyish white, the latter being in beautiful condition. There seem to be three distinct forms:—(1) a very red form = the type (*rufa*); (2) a grey form tinged with red = var. *lineola*, St.; (3) a pale grey form with no trace of red = var. *pallida*.

α. var. *lineola*, St.—The type of this variety is described as having "the fore-wings shorter than in *rufa*; colour, reddish-grey, with a longitudinal brown line at the base, occasionally branching thus < ; a row of dots parallel with the hind margins ;

fringe reddish; posterior wings with a row of dots parallel to the hind margin." (Humphrey and Westwood's 'British Moths,' vol. i. p. 245.) This intermediate form does not vary in the length of the fore-wings, more than the specimens of the type, *i.e.*, they both vary slightly. The small basal branching line is as frequent in the reddest types as in the variety.

β. var. pallescens, mihi.—I have a series of a fine pale form of this species, varying from pale whitish grey to almost white, without a trace of the rufous colouring; the spots as in the type. My specimens came from Deal. I have seen specimens of the type and *var. lineola* from Epping Forest, but do not know whether pale forms occur there.

It may be advisable to add that the female has a very different appearance to the male. It is much narrower winged, and with scarcely a trace of dots on either the anterior or posterior wings. It is but rarely captured, and owing to its habit of remaining hidden in the herbage by the side of the ditches where it occurs, is generally worn.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN JUNE.—At p. 184 of the 'Entomologist' a correspondent records the appearance of a specimen of *C. edusa* on the 12th of June, remarking that this butterfly appears to be out unusually early this year. Probably, if he had caught the insect, which he merely saw "careering along in its usual headlong fashion," he would have found that it was a hibernated specimen. While collecting at Starcross, South Devon, at the end of June, I took a specimen of *C. edusa*, which proved to be a hibernated female. I can fully confirm the experience of numerous correspondents who record the unusual abundance of hibernated specimens of *Vanessa cardui* and *Plusia gamma* this year.—E. W. H. BLAGG; Cheadle, Staffordshire.

APATURA IRIS IN HANTS.—In August, 1887, whilst driving in a dog-cart from Christchurch, I saw *Apatura iris* flying along the hedge of a bare roadside. I immediately gave the reins to a friend who was in the cart with me, and pursued it with the dog-cart whip, and through a piece of luck I managed to hit the

under wing above the upper, and so disabled it enough to capture it. It was a fine male specimen, and not in the least damaged with the novel way of capturing butterflies.—G. HESELTINE; Walhampton, Lymington, Hants.

DEILEPHILA GALII AT HOLLOWAY.—On Friday last, about 8 p.m., my brother caught a specimen of *Deilephila galii* flying round a bush of jessamine.—F. J. STONEMAN; 43, St. John's Park, Upper Holloway, N., July 25, 1888.

DEILEPHILA GALII IN BUCKINGHAMSHIRE.—I wish to record the capture of a fine specimen of *Deilephila galii*, taken at rest on a vine-leaf this afternoon in my garden.—W. THOMPSON; 183, Stantonbury, Stoney Stratford, Bucks, July 23, 1888.

DEILEPHILA GALII IN CUMBERLAND.—About 9.30 p.m., on the 21st of July, I captured with the net a fine specimen of *Deilephila galii* hovering over a bed of sweet-williams.—HUGH GOODFELLOW; Stone House, Carlisle, July 23, 1888.

DEILEPHILA LIVORNICA IN CORNWALL.—On June 13th I took a specimen of *Deilephila livornica* in our garden here, and the following night I took another within a yard or two of the same place.—A. MAYNE; Pons-a-Verran, Constantine, Penryn, Cornwall.

DEILEPHILA GALII IN ABERDEENSHIRE.—On Tuesday, July 17th, a fine specimen of the above species was captured in one of the principal streets of this town, and is now in my possession. I know of several specimens of this insect that have been found near here during the past few years.—ARTHUR HORNE; 48, Chapel Street, Aberdeen, N.B., July, 1888.

SESIA CULICIFORMIS VAR.—Respecting the communication from Mr. T. D. A. Cockerell, which was read before the South London Ent. and Nat. Hist. Soc. (Entom. p. 192) referring to the white-banded variety of *S. culiciformis* mentioned in my notes in the 'Field' (1887, p. 828), it appears to be a form unknown to the members of the Society who were present at the meeting. I captured the specimen on June 14th, 1887, whilst it was hovering round a birch-stump in West Wickham Wood, the white band showing very conspicuously when flying; Mr. A. Thomson, who was with me at the time, saw the moth while alive in my net. The usual red of the band, base of the wings and thoracic markings, are all of a clear creamy white colour, without

the slightest trace of any red scales, which are present in the yellow-banded forms that I have examined, therefore my specimen seems to be a well-defined white-banded variety.—F. W. FROHAWK; Balham, S.W., July, 1888.

ZYGÆNA LAVANDULÆ, *Esp.*, VAR.—Many of the species comprised in the genus *Zygæna* are liable to variation in the colour of their spots, but I do not remember ever having heard of this being the case with the South European species *Z. lavandulæ*, *Esp.* This winter, however, at Cannes, I obtained about six or eight larvæ of this handsome species by sweeping, all from the same locality. I fed them all together on *Dorycnium suffruticosum*, the only plant, as far as I know, on which they feed. I have never found them on *Lavendula*. In due time, at the beginning of April, they all spun up, making the usual-shaped burnet cocoon. Later on, from the 27th of April, the first specimens began to emerge, as usual; the wings metallic-greenish or violet-black, with red spots, and the collar white. On the 23rd of May, nearly a month after the first had emerged, I found in my pupa-cage a remarkable aberration, which had just made its exit from one of the *lavandulæ* cocoons. This is its description:—It is slightly smaller than the type, expanding $1\frac{1}{2}$ in. instead of $1\frac{1}{3}$ in.; it has the wings nearly the same colour, but more distinctly greenish, and the white collar is as usual; but the spots, instead of being dark crimson, are a fine ochre-yellow, and the flush of red, which is present on the under side of the wings in the normal variety, is transformed in the same way. Several normal *Z. lavandulæ* emerged later still. I think this accidental variety is fully worth chronicling, as a well-known entomologist, who has resided for many years at Cannes, where the species is pretty common, has never met with this striking aberration of *Z. lavandulæ*.—J. C. WARBURG; 8, Porchester Terrace, London, W., June 22, 1888.

DICRANURA VINULA ON TAMARISK.—Under the above heading (Entom. 157) I recorded the occurrence of *Dicranura vinula*. I regret that I was in error in stating that there was no poplar in the garden. Since the foliage has appeared I have discovered the stump of an old poplar, on which in all probability these larvæ were reared. My mistake was a natural one, as this old tree was in the line of tamarisks, gnarled and old, which hang over the old wall of the Castle. In appearance it was identical

and deceived me, though I was most particular in searching. I regret the mistake and hasten to rectify it.—(Major) CHARLES PARTRIDGE ; The Castle, Portland.

THE ABUNDANCE OF *PLUSIA GAMMA*.—There has been an extraordinary abundance of this insect here, about three-fourths of the insects I have caught at dusk during the last month proving to be worn examples of this species. I failed to procure any good specimens, and therefore came to the conclusion that they must be hibernated examples.—A. E. HALL ; Norbury, Sheffield, July 1, 1888.

ABUNDANCE OF LARVÆ. — This year has been a phenomenal one here, as far as the great quantity of Geometer larvæ is concerned. Nearly all the woods I have visited in this locality have been considerably disfigured, but none of them could compare to Ecclesall Wood, near here, the oaks and hazels of which were completely denuded of their foliage and are now putting forth a second crop of leaves. The larvæ were principally *Hybernia progemma* and *H. aurantiaria*, the former of which completely covered one, and was continually falling down one's neck whilst beating. *H. defoliaria* appears here to prefer elm to execute its gormandizing propensities. A few larvæ of *Phigalia pedaria* and *Oprobria dilutata* occurred. *Tæniocampa pulverulenta* larvæ were swarming in some parts, twenty and more in my tray at once. The larvæ of this species are nearly as bad cannibals as *Calymnia trapezina*.—A. E. HALL.

SUGARING NEAR CARLISLE.—In this neighbourhood sugaring has been almost useless during the summer months, but always improved in October. This year, however, since the 11th July, many common species have been plentiful at sugar, such as *Agrotis segetum*, *A. exclamationis*, *Leucania pallens*, and *Xylophasia monoglypha*. I have a large bed of valerian, which is attractive to Plusiidae and *Cucullia umbratica*.—M. ROUTLEDGE ; Hayton, Carlisle, July 23, 1888.

AMPHYDASIS STRATARIA AT LIGHT. — I captured three specimens, at light, of this beautiful insect, on April 11th, 13th and 14th, and I have no doubt could have captured a great many more.—G. HESELTINE ; Wallhampton, Lymington, Hants.

CIDARIA SUFFUMATA VAR. PICEATA. — *Cidaria suffumata* has not been quite so plentiful this season as formerly, owing no

doubt to the cold winds of April and May. A far greater proportion, more than has been known before, were of the var. *piceata*, with intermediate forms. I have noticed that these dark forms have become more numerous during the last four seasons.—WM. NEWMAN; 21, Russell Street, Darlington.

THE COLORADO BEETLE.—I read in the 'Entomologist' (page 163), a notice by Mr. Cockerell in regard to this species, which is still mentioned under the generic name of *Doryphora*, although in a former communication on the subject the species is rightly placed in *Leptinotarsa*. The genus *Doryphora* is distinguished from all other true Chrysomelinæ by having the mesosternum produced into a longer or shorter horn-like process, which in *Leptinotarsa* is entirely absent; the Colorado potato-beetle should, therefore, never be spoken of as a *Doryphora*. It seems yet somewhat doubtful which is the real culprit amongst several closely-allied species of *Leptinotarsa*; the figures sent out and published from America give the species with red legs (Say does not mention the colour of the legs), but there are several closely-allied species (*L. junta* and *L. 11-lineata*) in which the legs are black; all of them have been found to inhabit Mexico and other parts of Central America, and it is quite possible that it is not only *L. 10-lineata* which is said to do such mischief, but also some of his near relations. I should be very glad to receive dead specimens of authenticated potato-beetles from America, to compare them with their Mexican allies in my collection.—MARTIN JACOBY; 7, Hemstall Road, West Hampstead.

LUCANUS CERVUS IN LINCOLNSHIRE.—I had the pleasure of taking a few specimens of *Lucanus cervus*, females, in this locality quite recently, the largest measuring one inch and a quarter.* This will be information for Mr. W. H. Bath. I also obtained one specimen of *Scaphidium quadrimaculatum*.—C. K. TERO; B 32, Kent Street, Grimsby, July 20, 1888.

STRANGALIA AURULENTA, F.—I found several specimens of this handsome beetle beside a small beech-plantation south-west of Great Berkhamstead, on 21st and 22nd of July. They seem to affect the flowers of *Scabiosa arvensis*, &c.—JOHN T. CARRINGTON; New Broad Street House, London, E.C., July, 1888.

* *Lucanus cervus*, L., was taken by myself in Boston, Lincolnshire, in 1872, while on a visit to that district.—T. R. B.

SIREX GIGAS.—On July 22nd I found a large female specimen of *Sirex gigas* crawling over a larch-tree, which had been cut down during last winter from a small larch-plantation south-west of Great Berkhamstead in North Hertfordshire. I have little doubt that the insect had emerged from pupa in one of the trees of this copse, for there did not seem to be any foreign timber for more than a mile distant.—JOHN T. CARRINGTON; July, 1888.

BRITISH MUSEUM.—Readers of the 'Entomologist' will be glad to learn that the Insect Room of the British Museum at South Kensington has been enriched by the addition of the collection of Lepidoptera formed by the late Dr. Pool, of Tottenham, presented by his widow. The collection is contained in three cabinets, is well arranged according to the 'Entomologist' List of Lepidoptera, and is in good condition. It contains some rare and less common species. Although Dr. Pool had his practice to attend to, he managed in a quiet way to form a nice collection, most of his entomological work being done in the early hours of the morning; and he was very successful in rearing many species, one of his daughters assisting him in this work.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*July 4th, 1888.* Dr. D. Sharp, F.L.S., President, in the chair. The Hon. Lionel Walter de Rothschild, of Tring Park, Tring, Hertfordshire, was elected a Fellow of the Society, and Mr. George Meyer-Darcis was admitted into the Society. Mr. Enock exhibited male and female specimens of a spider received from Colonel Le Grice, R.A., who had captured them at Folkestone on the 27th May last. They had been submitted to the Rev. O. Pickard-Cambridge, F.R.S., who identified them as *Pellenes tripunctatus*, a species new to Britain. Mr. Enock also exhibited specimens of *Merisus destructor* (Riley), a parasite of the Hessian Fly, bred from British specimens of that insect. Mr. Wallis-Kew exhibited a number of larvæ of *Adimonia tanacetii* (Fab.), found in Lincolnshire, feeding on Scabious. Mr. Porritt exhibited a number of variable specimens of *Arctia mendica* bred from a batch of eggs found last year on a species of *Rumex* near Hudders-

field. Mr. Porritt said that this species, in the neighbourhood of Huddersfield, was often more spotted than the typical form, but he had never before seen anything approaching in extent the variation exhibited in these bred specimens. Out of forty-four specimens (twenty-five males and nineteen females) not more than eight were like the ordinary type of the species. Mr. M'Lachlan exhibited a quantity of *Palingenia longicauda* from Holland—the largest of the European *Ephemeridæ* (Mayflies), and at the same time one of the most local. Mr. Jacoby exhibited the following species of Phytophagous Coleoptera from Africa and Madagascar, recently described by him in the 'Transactions' of the Society, viz.:—*Lema laticollis*, *Cladocera nigripennis*, *Oedionychis madagascariensis*, *Blepharida intermedia*, *B. nigromaculata*, *Chrysomela madagascariensis*, *Sagra opaca*, *Blepharida ornaticollis*, *B. laterimaculata*, *Mesodonta submetallica*, *Schematizella viridis*, *Spilocephalus viridipennis*, *Apophyllia smaragdipennis*, and *Aethonea variabilis*. Mons. Alfred Wailly exhibited a large number of species of Lepidoptera and Coleoptera, recently received by him from Assam, from the West Coast of Africa, and from South Africa. He also exhibited eggs and living larvæ of *Bombyx cytheræa*, and made remarks on the life-history of the species.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 28th*, 1888. John T. Carrington, Esq., F.L.S., Vice-President in the chair. Miss M. Kimber and Mr. A. E. Hall were elected members. Mr. Hawes exhibited pupæ of *Argynnis paphia* and *A. adippe*, from South Suffolk. Mr. Slater, a specimen of *Charocampa nerii*, from Zululand, and remarked on the difference in colour between the insect shown and European examples of the species. Mr. West, of Streatham, specimens of *Chariclea umbra*, bred from larvæ found at Folkestone. Mr. Tugwell, examples of *Spilosoma menthastri*, and var. *ochracea*, bred from ova received from Dundee, the larvæ having been fed upon stinging-nettle. Mr. Tugwell mentioned that he had recently bred several specimens of *Sesia sphægiiformis*, the larvæ having been found at Tilgate Forest, and remarked that in his experience he was of opinion that the insect was three years in the larval stage, the ova being laid in July, the larvæ feeding through that year; the second year were found feeding close to the bark; and they also fed during the third year, pupating

about the second week in May, the perfect insect appearing the first or second week in June, usually about nine or ten o'clock on a sunny morning. Some observations were made by members on capturing the rarer species of Sesiidæ.

July 12th, 1888. J. T. Carrington, Esq., Vice-President, in the chair. Messrs. A. L. Clarke, W. B. Farr, and R. Atherton, were elected members. Mr. Weir exhibited a male specimen of *Lycæna icarus*, which he had taken at Lewes in June last. It was remarkable as showing a slight tendency to hermaphroditism. There were on the upper side of the underwings two well-defined and several smaller submarginal spots, the colour of all the wings in other respects was that of an ordinary male of the species. His attention had been drawn to the insect by a male of the same species, evidently by its actions, mistaking the specimen exhibited for a female. Some discussion followed, Messrs. Tutt, Tugwell, South, Weir, Carrington, and others taking part. Mr. Jäger, two specimens of *Anetia villica*, with dark hind wings, forms of *Eupithecia rectangulata*, and an example of the larvæ of *Callimorpha hera*. Mr. R. Adkin, *Eupithecia togata*, bred from Perthshire larvæ; the imagines varied much as to colour. Mr. Robinson, an example of *Miana strigilis*, from Monkswood, which was pinker than usual. Mr. South remarked that he had taken very large and red forms of this species in North Devon. Mr. Dobson, *Asphalia ridens* and *Notodonta chaonia*, bred from larvæ beaten in the New Forest. Mr. Turner, a variety of *Vanessa cardui*, an example of the female *Ermaturga atomaria*, with a pale fringe, and specimens of *Pieris napi*, and asked whether the absence of spots in this species was unusual. Mr. Weir, in reply, said it was not at all unusual in the spring emergence. Mr. West, Greenwich examples of *Rhantus notatus*, *Ceryon aquaticus*, *Heteroceris obsoletus*, taken on the Salt Marshes, Milton, near Gravesend. The Secretary exhibited on behalf of Mr. T. D. A. Cockerell, a sketch of a Thomisidæ spider, on flower of *Ligustricum montanum*, observed by him in Custer Co., Colorado, and read notes on the deceptive likeness of the spider to the flower. Mr. Weir said similar spiders were not at all uncommon in England; there were several species closely resembling the flowers on which they were in the habit of sitting for the purpose of obtaining their food.—H. W. BARKER, Hon. Sec.

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THE EFFECT OF METEOROLOGICAL CONDITIONS UPON INSECT-LIFE.

BY WILLIAM WHITE, F.E.S.

THE problem whether or not there is any precise correlation between the light and dark forms of lepidopterous insects and their climatic condition is one that has received little attention as yet. Similarly, the influence of irregular or intermittent temperature upon the emergence of insects has scarcely been dealt with.

In consideration, therefore, that the present extraordinary summer is remarkable for having contained two of the coldest days in July that have ever been known for that month in Britain, it seems to me very desirable that observers make a special point this season of registering their experiences respecting any abnormality in the appearance of insects of various orders noticed by them.

The climatic variations throughout the spring and summer, up to the present time, have been altogether abnormal. Mr. G. J. Symons, F.R.S., the well-known meteorologist, states that he knows no parallel to the July weather of this year, and he records, in a letter to the 'Times' newspaper, July 13th, 1888, that on the 11th of July the lowest temperature registered in London was "absolutely without precedent" in the annals of British Meteorology, and very nearly so on July 12th also. The *mean* temperature registered by him on the former date was as low as $46\cdot2^{\circ}$, and on the latter $48\cdot1^{\circ}$; whilst the lowest records in July of any previous years are $47\cdot7^{\circ}$, reached on July 20th, 1836, and

48° on July 8th, 1856. "As a rule," he observes, "the hottest day in the year in London is July 16th, but it would not be at all difficult to find two days in *January* warmer than these two [11th and 12th] in July." Thus, taking the first that came to hand, he makes the following comparison:—

	Minimum.	At 9 a.m.	Maximum.
Jan. 1, 1877 .	49·3°	50·0°	54·0°
July 11, 1888 .	42·8°	45·4°	55·7°
„ 12, „ .	45·4°	49·9°	54·2°

This unseasonable coldness is doubtless a result of the remarkably frequent and heavy rainfalls which have been of almost daily occurrence throughout the month, and earlier; whilst in the mountainous regions of Great Britain, and even in some central parts of England, heavy falls of snow took place.

It should, however, be borne in mind that this moist season was preceded by a long spell of unusually dry weather in the early spring, which considerably affects the amount of rainfall for the entire half-year.

From the August number of 'Symons's Monthly Meteorological Magazine,' which contains many interesting particulars respecting the extraordinary summer weather lately experienced in Great Britain, I find that the rainfall in London during last month, when compared with the fall in July of last year,—an exceptionally dry season,—presents an extreme contrast, the total fall having been five times in excess in point of frequency, while it was seven times as great in quantity. At the same time it appears that the actual fall for the month was not unprecedented. July, 1880, indeed, was wetter by 2°, and other of the summer months in several previous years have had a considerably higher register. The *apparent* excess of moisture, therefore, is due to the fact that, although there were several torrential falls of short duration, most of the rain occurred in the form of continuous drizzle. Rain fell on no less than 26 out of the 31 days in the month, and between June 4th and July 31st on 46 days, only 11 days being without rain, against only 10 days *rainy* weather during the same period in 1887. The month was, indeed, more remarkable for the lowness of temperature than for moisture alone.

The following is a comparative table of temperature-registration for the last 30 years, as derived from the source above-mentioned:—

	July, 1858—88.	1888.	Comparison with former Years.
Mean temperature at 9 a.m.	64.5°	59.2°	In 1879, also 59.2°; no other year below 60°.
Absolute maximum	86.0°	75.9°	In 1860, also 75.9°; no other year so low.
Average maximum	74.7°	67.3°	1879, 67.7°; 1875, 69.8°; 1860, 69.9°.
Average minimum	54.0°	52.3°	1863,—lowest on record,—50.2°; and there are nine other instances lower than reached this year.
Absolute minimum	45.2°	42.8°	1863,—lowest on record,—40.3°; five other lower registrations in previous years.

“Hence,” Mr. Symons remarks, “although the *minima* have not been excessively low, the *maxima* have been low beyond all precedent for 30 years, and it is to that, coupled with continuous and heavy, though not unprecedented, rain, that all the discomfort and loss is due.”

The practical economic effect of these conditions upon insect-life is a matter of equal interest to the entomologist and the farmer, and the subject is one that is well worthy of special study.

It has been mooted by more than one writer that melanism is produced simply by atmospheric conditions, being due either directly to local humidity (see Mr. T. D. A. Cockerell's paper in *Entom.*, vol. xx., pp. 58—9), or indirectly, as a consequence of moisture, to the darkening of the wood-surfaces to which the insects cling ('On Melanism in *Lepidoptera*,' by Dr. T. A. Chapman, *E. M. M.*, vol. xxv., p. 40). Neither theory can, I think, be said to furnish a satisfactory explanation, and the evidence yet produced is of the slightest nature; but on the supposition that either be true, we should certainly this year have, as a result, a very large proportion of melanic forms throughout the country, and the rare opportunity thus afforded of practically testing the validity or otherwise of these suggestions by observation should not be lost.

It must, however, be well borne in mind that lateness of appearance of any species is not, of course, necessarily connected with this particular season. Numerous instances of retarded emergence are annually recorded in these pages, and in illustration I may cite that I have two pupæ of *Euchloë cardamines* which have not yet developed, though apparently living, while several

similar cases of late emergence of this insect were recorded last year (Entom., vol. xx., pp. 63, 106, and 135).

The subject, considered more generally, is one well deserving careful attention, and statistics of captures including numerous species viewed in relation to date, if sufficiently extensive, would lead to interesting results.

4, Mecklenburgh Square, W.C.

NOTE ON A SPECIES OF *ACROPS* FROM JAPAN.

By G. LEWIS, F.L.S.

IN the 'Munich Catalogue' there is only one species of this genus (recorded from Sumatra), but in my collection I have three species from Borneo, and, as I found it in S. Japan, I think the genus may not only be represented by a fair number of species, but that it may also be widely distributed in Eastern Asia. The species are very difficult to differentiate, but the characters from the four species before me seem to consist chiefly in the form of the forehead, in the relative position of the eyes to each other, and in the shape of the thorax. I have only seen eight Japanese examples, but I infer there are no conspicuous sexual characters.

ACROPS HIGONIA, n. sp.

Oblongo-ovalis obscure ænea, supra parum convexa; fronte lata, clypeo læviter emarginato; fronte rugosa et ocellato-punctata, oculos approximatis, pronoto angulos anticis modice productis, posticis rotundatis; elytris reticulato-punctatis, obscure maculatis, apicis obtusis; antennis pedibusque concoloribus. Long. $4\frac{1}{2}$ mill.

The slight emargination in the anterior edge of the clypeus has, under the microscope, an obscure projection in the middle; the eyes are elliptical, and approach each other in the middle of the neck, leaving only a narrow space between them. In one of the Borneo species the eyes almost touch, in another the distance is double that in *higonia*. The angles of the thorax anteriorly are rather produced, but blunt; and the hind angles are rounded off, and not angulate or emarginate, as other species are. The maculation of the elytra is diffused, and not very distinct; in this character it corresponds with one Borneo species, but in another

from the same island the maculation consists of fairly well-defined spots.

I obtained this species under bark of dead trees (*Rhus*), which were dry and exposed to the sun in May, 1881, at Konose and Yuyama.

There are a fair number of Trogositidæ in Japan, but the species are not yet worked out. *Leperina squamulosa*, Gebl., occurs in most of the forests, and is not rare. I also found a second species, which is more local, and I obtained only eight examples. *Peltis grossa*, L., is not rare in Yezo, and there are three or four species of *Thymalus*. The two insects named are recorded from Japan for the first time.

Wimbledon, August 7, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

(Continued from p. 209.)

Tapinostola, Ld., *fulva*, Hb.

The type of this species is represented by Hübner's fig. 496, which has the anterior wings and fringes of a bright red with dark nervures, and a row of black dots, one on each ray, parallel to the hind margin. Hind wings dark grey with pale fringes, and no spots. Dr. Staudinger describes it as "*alis anterioribus totis fulvis*." This is a most variable species, the ground colour going through every gradation, from bone-white, ochreous, reddish, to deep brick-red. The type does not appear to occur in England, some of the Scotch specimens approach it, but the beautiful red Irish specimens are the true type.

α. var. fluxa, Tr.—Treitschke (vol. v., p. 313) gives the following description of the type of this variety:—"Alis anticis fusco rufescentibus, atomis venisque nigricantibus." Dr. Staudinger says of this form, "Paler, reddish, or greyish yellow." The greyish yellow forms are included on his own responsibility. Certainly they are not included by any other writers. In Humphrey and Westwood's '*British Moths*,' vol. i., p. 219, there is a fuller description of *fluxa*,—it is "of a reddish brown colour, slightly

irrorated with dusky scales; veins dusky; hind wings brown, with the base and costa ashy." There is no doubt that the greater number of our Northern, English and Scotch forms would be included under this varietal name.

β. var. pygmina, Haw.—This was treated as the type by all our old British authors, the species being thus dealt with in Haworth, Stephens, Wood, and Humphrey and Westwood's 'British Moths.' Haworth's description is "the thorax and anterior wings reddish and unspotted, the veins scarcely marked, the hind wings fuscous, the abdomen white."—*'Lepidoptera Britannica,'* p. 176.

γ. var. pallida, St.—Figured by Wood in his 'Index. Ent.,' plate xv., fig. 371, and also in Humphrey and Westwood's 'British Moths,' plate xlvii., fig. 10. At p. 219 of the latter work it is described as: " $\frac{3}{4}$ of an inch in the expanse of the fore-wings, which are ochreous, whitish, and without any traces of spots or markings; the veins alone in the apical part of the wing irrorated with dusky scales, and the hind wings whitish."

δ. var. neurica, St. (non Hb.)—Hübner's *neurica*, fig. 381, is another distinct British species. Stephens' *neurica*, and Wood's ('Ind. Ent.,' plate xv., p. 372), must not be confounded with Hübner's (*Nonagria*) *neurica*, as it is only a var. of *fulva*. It is described as "about five-sixths of an inch in the expanse of the fore-wings, which are ochreous or brownish red, with a curved row of minute dusky dots beyond the middle of the wing; the apical veins slightly brownish, and the hind wings pale whitish ash. Taken but rarely at Lea Bridge and Whittlesea Mere."—(Humphrey and Westwood's 'British Moths,' p. 219.)

ε. var. concolor, Gn.*—"Superior wings oblong, with the hinder margin straighter at first, then more curved than *fulva*; of a bone-white colour in both sexes; lightly powdered with grey at the ends of the spaces between the nervures, and developed into indistinct dark streaks; a row of black spots always distinct, though faintly marked, in place of the transverse angulated line. Inferior wings of a darkish grey in both sexes, with the ends of the nervures and the fringes clearer." (Guenée's 'Noctuelles,' vol. v., pp. 103, 104). All authors have treated this as a distinct species, in my opinion altogether on insufficient

* My reasons for treating this as a variety are discussed fully in the 'Ent. Mo. Mag.,' vol. xxv., pp. 52—55.

data. Newman figures both sexes of it in his 'British Moths,' p. 274, where it is also treated as a distinct species. Staudinger treats it as synonymous with *extrema*, Hb., which seems to me impossible. This variety had not been taken in Britain for many years, until I took it at Deal in 1885, 1886, and 1887. Mr. Warren writes:—"Some twelve years ago, Albert Houghton and myself each took a *concolor* on June 26th. Both were much worn. He threw his, a female, away; I kept mine, a male, and it was sold with the rest of my *Macros*" (*in litt.*).

The following seems to me a fair summary of the forms described by previous authors:—

1. A very dark red form, with a transverse row of dots = *fulva*, Hb.
2. A red form, unspotted = var. *pygmina*, Haw.
3. An ochreous red, or brownish red form, with dots = var. *neurica*, St.
4. A reddish-ochreous form, without dots = var. *fluxa*, Tr.
5. An ochreous or whitish form, with dots = var. *concolor*, Gn.
6. An ochreous or whitish form, without dots = var. *pallida*, St.

Tapinostola, Ld., *hellmanni*, Evers.

The type of this species is described by Staudinger as "pale, greyish or reddish straw-colour." Guenée's var. A. is undoubtedly the type, he describes it as "less red, more powdered with grey, reniform stigma more yellowish than red; inferior wings darker."—'Noctuelles,' vol. v., pp. 104, 105.

Var. *saturata*, Stdgr.—This is a dark reddish variety. Staudinger says of it, "Obscurior, alis anterioribus sæpius totis rufis." Newman, in his 'British Moths,' p. 275, has described apparently only the red form. Guenée also treats this form as his type. The two forms occur in the same localities and appear equally common.

Tapinostola, Och., *elymi*, Tr.

Treitschke's original description of the type is as follows:—"alis anticis solito longioribus pallide flavis atomis fuscis adspersis serie externa striolarum fuscarum" ('Die Schmet. von Europa,' vol. v., p. 294). This species varies but little; the females are generally paler than the males, and the latter sex are in some specimens more strongly powdered with brownish or fuscous scales than in others.

Nonagria, Och., *neurica*, Hb.*

The type of this species is represented by Hübner's fig. 381. It is a male of a dull clayey brown colour, with a row of five or six small longitudinal spots along the median nervure, at the end of which is a dark spot surrounded by a whitish ring. This is in reality the lower half of the reniform, the orbicular and upper part of the reniform being entirely absent. An angulated row of eight black dots runs parallel to the hind margin. Hind wings unicolorous blackish grey. Some of our Cambridge specimens are exactly of this form. I have two which came from Mr. Warren, exceedingly characteristic, but a little redder brown in ground colour. Staudinger says of it, "species gracilior, subtus immaculata," but this seems simply a summary of Schmidt's distinction, 'Stett. Ent. Zeit.,' 1858, p. 367. Our specimens generally are of 'a greyish brown colour, tinged with reddish, with a dark, blackish, longitudinal line under the median nervure extending almost to the outer margin. In the black streak, more than half-way from the base, is a tiny black dot with a pale circumscription, which is sometimes joined to another similar but paler spot just above, but sometimes separate, the two together forming the reniform. The orbicular more or less indistinct, a faint trace of a row of tiny dots parallel to the hind margin. The nervures blackish. Hind wings dark grey, with a pale shade parallel to the hind margin; a slightly darker lunule is present.' This is *arundineta*, Schmidt. Treitschke, in his 'Die Schmet. von Europa,' vol. v., p. 319, well described this form, under the name of *neurica*, as:—"alis anticis flavo vel fusco ferrugineis vena maculaque medio albicantibus, serie punctorum nigrorum ad marginem externum."

α. var. arundineta, Schmidt.—Dr. Staudinger says of this variety:—"with the anterior wings pale, of a greyish straw-colour." The chief points of distinction, as given by Schmidt ('Stett. Ent. Zeit.' 1858, p. 367), are as follows:—"The difference between *neurica* and *arundineta* is less in the under-side and in the markings than in the different structure of the body and the wings. *Neurica*, Hb., is the more slender, *arundineta* the more robust form. The colour of both forms varies in the same manner, but *arundineta* has a dark spot on the under

* Vide 'Ent. Mo. Mag.,' vol. xxv., p. 56.

side of each wing, which *neurica* never has." My good friend, Herr Hoffmann (Hanover) also adds:—"Herrich Schaffer declared both forms *neurica* and *arundineta* to be different species, and so did Staudinger afterwards." A full description of this variety is given above in the comparison with the type.

β. var. *rosea*, mihi.—Like the variety *arundineta*, but with the whole of the anterior wings suffused with a rich rosy colour. The form is not common, but the Cambridge collectors get a few every year.

γ. var. *dissoluta*, Tr.—This variety was first figured by Hübner, 659—661, under the name of *neurica*, but since Treitschke first described this form under a distinct name, his name has been retained as the varietal name. Dr. Staudinger, in his 'Catalogue' (p. 106), treats it as distinct, and writes of it:—"a more robust species, wings spotted underneath." Hübner's fig. 659 is a male, the anterior wings very dark brown, with no orbicular, the outer half of the reniform lined in with pale, a pale line beyond the reniform parallel to the hind margin. Posterior wings with the outer margin blackish grey, the base paler, with a distinct black lunule. Hübner's fig. 660 is an underside, and 661 is a female, which is marked like the male, but rather larger. A fair figure of this variety is in Newman's 'British Moths,' p. 271, fig. 2. Mr. Warren writes me:—"The dark *neurica* of old time came from Yaxley, Hunts." It is not obtained in any of the British localities for *neurica* at the present time.

Nonagria, Och., *geminipuncta*, Haw., Hatchette.

Haworth published the following description of the type:—"The wings reddish fuscous, with a broad red band along the inner margin, and two small white spots in the place of the posterior stigma."—"Lepidoptera Britannica," p. 176. As the name signifies, the great character of the type is the presence of the reniform as two distinct white spots. This form Hübner figures (628 and 629) as *guttans*. Dr. Staudinger seems to lose sight of the fact that this is the type, for in his 'Catalogue,' p. 106, he writes:—"ab. *guttans*, Hb., reniform stigma in two separate spots." Guenée treats *paludicola* as the type and *guttans* as a variety. Both Haworth's description and Hübner's figure ignore the presence of a black dot between the double white spot on the base. The number of white spots

varies, sometimes only one is present, sometimes neither. I have all the above forms from Yorkshire and Sussex localities.

α. var. paludicola, Hb.—Hübner figures (624) a fine variety under this name. It is of a dark reddish brown colour, with white median and basal nervures, a small black orbicular, the inner edge of the reniform lined with white, so as to form a white lunule, the remainder of the reniform blackish, the outer part of all the nervures white on and towards the hind margin. Hind wings dark grey, base paler, with a distinct lunule. I do not know of British specimens of this variety.

β. var. unipuncta, mihi.—Like the type but with only the lower half of reniform white. Hübner's fig. 637 depicts this form, but is rather dark in ground colour. This form occurs in Sussex and Yorkshire localities with the type.

γ. var. obsoleta, mihi.—Like the type but with the white twin spots characteristic of the type altogether absent. This form also occurs in the same localities with the type.

δ. var. nigricans, Stdgr.—Staudinger described this variety as "the anterior wings wholly blackish, with the reniform indistinct." How Staudinger can refer Hübner's fig. 624 to this variety, and how he can reconcile the white nervures of Hübner's figure with his description of *var. nigricans* surprises me!

Nonagria, Och., *cannæ*, Och.

Treitschke first described this species under the name *cannæ* in 'Die Schmet. von Europa,' vol. v., p. 225, although Ochsenheimer, in the above work, vol. iv., p. 82, had named the species *cannæ* before this, with reference to previously published figures.* Treitschke's description is as follows:—"alis anticis flavo-rufescentibus, serie unica maculaque obsoleta in medio nigris." So far as I have been able to judge from continental specimens, the variation is chiefly sexual, the males being strongly reddish, the females yellowish ochreous, and this is borne out by Hübner's figs. 386, 387. His figure 386 is a male; ground colour reddish ochreous; median and costal nervures grey; a transverse curved row of seven dots; hind wings unicolorous grey. Hübner's fig. 387 is probably a female of a pale yellow ochreous colour, with median and costal nervures darker; a transverse row of seven

* Ochsenheimer wrote the first four vols. of 'Die Schmet. von Europa,' Treitschke finished the remaining vols. after Ochsenheimer's death.

black dots on nervures, hind wings grey with a paler line parallel to hind margin. Both these are figured by Hübner under the name of *arundinis*. Guenée, in his 'Noctuelles,' vol. v., p. 108, writes:—"Varies extremely in colour." In the 'Ent. Mo. Mag.,' vol. xxii., p. 170, Mr. F. D. Wheeler, M.A., who has given especial attention to this rare British species, writes:—"Our Norfolk specimens are rather brown than red, some, indeed, of them are getting on for black, and the colour helps to make them inconspicuous."

Nonagria, Och., *sparganii*, Esp.

The type of this species is described by Treitschke, vol. v., p. 323, as:—"alis anticis pallide flavis atomis fusciscentibus adspersis lunula media strigisque duabus punctatis nigris." This species is a most variable one, and on the Continent ranges from pale ochreous to deep red. Guenée, in his 'Noctuelles,' vol. v., p. 108, writes:—"The males vary from whitish grey and ochreous to reddish brown." The only British specimen I have taken is strictly typical, in so far as it is pale yellowish dusted with fuscous scales, especially under the median nervure, with a median lunule (the character of this lunule is rather uncertain, my specimen has a pale spot at the extreme end of the discoidal cell with a black lunular circumscription placed around its lower half), a transverse row of black dots parallel to the hind margin, and another within the fringes. The British specimens, however, vary much. Mr. Sydney Webb, who added this species to the British fauna, writes of it:—"I may say that it is, without doubt, of all the family, most given to vary. The ground colour not only ranges from bone-colour to reddish ochreous, but oftentimes these hues are both present (one covering the other in streaks from the base overlying and extending beyond the wing rays), whilst the dark scaling seems to vary in every individual" (*in litt.*). The specimen figured (Entom. xiii., p. 49), (the one to the left), is perhaps slightly darker than the type, but otherwise agrees well, the lunule referred to can be very distinctly seen.

α. var. obsoleta, mihi.—The anterior wings of the same pale ochreous colour as the type, but sparingly scattered with fuscous scales, the nervures simply a little more dusky than the ground colour, the black lunule and all the markings of the central

part of the wing obsolete. The two transverse rows of dots fainter than in the type.

β. var. bipunctata, mihi.—Ground colour pale ochreous, with no trace of a dark shade under the median nervure, and no scattered fuscous scales. A short black lineola on the median nervure, just before the centre of the wing, above which (the lineola) can be traced the faintest possible outline of the orbicular, and the characteristic small black lunular mark (which seems to be the circumscription of the lower part of the obsolete reniform) stand out conspicuously. A transverse row of minute dots, and a more sharply-defined row is placed just within the pale fringe. Hind wings white, with a slightly shaded base. This description is written from a specimen kindly lent me by Mr. Webb, and figured (not very satisfactorily) *Entom.* xiii., p. 49, fig. 2 (to the right hand). Mr. Webb writes me with reference to this:—The central specimen is perhaps more worthy of a varietal name than any of the *sparganii*. It occurs in both sexes, but more commonly in the female.

γ. var. rufescens, mihi.—The ground colour much suffused with reddish ochreous, the characteristic markings generally strongly developed. The red varieties are exceedingly suffused—in some instances—with fuscous scales. Hübner figures this red form (549), and I have some very strongly-coloured specimens from Germany. Mr. Sydney Webb has also sent me a red specimen captured in the south-east of England.

Nonagria, Och., *arundinis*, F.

The type of both sexes in this species is of a pale greyish colour, the males being but very little darker than the females.

Var. fraterna, Tr.—The anterior wings of this variety are suffused with deep reddish brown or black scales, in some specimens to such an extent that the insect is almost black in colour. The hind wings much darker than in the type, especially the females. This is Guenée's var. A, of which he says:—"Superior wings of a deep blackish or reddish brown, which absorbs almost all the markings and nervures; nervures of hind wings blackish." Under the name of *fraterna*, Tr., Guenée describes an intermediate form between *fraterna* and the type. There is no doubt that these are the males and females of the same variety, the extreme dark forms of his var. A being nearly always females,

the dark form with paler hind wings being males. *Fraterna* occurs sparingly in all localities with the type. From 1881 to 1883 I bred a large number of *arundinis* from the neighbourhood of Higham, Kent; not more than one in thirty were *fraterna*, and these always females. In 1884 I collected a few pupæ on the marshes a few miles further down the river Thames, and out of about thirty insects bred I got about twenty dark males, two dark females, the remainder being typical. Hübner (fig. 437), under the name of *typhæ*, figures a male of this variety. His figure is of an unicolorous reddish brown, with black nervures, hind wings ochreous with dark hind margin, dusky nervures, and distinct lunule.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN SUSSEX.—My brother captured a fine specimen of *Vanessa antiopa* flying near a pond in this neighbourhood on the 13th August this year.—W. H. MULLENS; Westfield House, Battle, Sussex.

VANESSA ANTIOPA.—This afternoon I captured a fine specimen of this butterfly, with the usual pale border, in the gardens of the Totland Bay Hotel, Isle of Wight, flying over the flowers of the privet, which was in profusion. Although I have collected insects for the last fifty-five years, this is the first time I have seen it on the wing in England. *Vanessa io*, *V. atalanta*, *V. polychloros*, *V. urticæ*, and *V. cardui* were all more or less abundant, flying over the same flowers.—SAMUEL STEVENS; August 14, 1888.

VANESSA ANTIOPA IN HANTS.—A specimen of *Vanessa antiopa* was taken on the 10th inst. in Rhanmor Enclosure, New Forest, by young Frank Gulliver. I saw it before &c.—A. J. HODGES; 2, Highbury Place, Islington, London, N, August 15, 1888.

LYCENA ARGOLUS AT LUCERNE.—This species was seen very abundantly by myself in the marshes in the neighbourhood of Lucerne during the end of July and the beginning of August. It would be interesting to know what could supply its pabulum in that situation.—W. HARCOURT BATH; Ladywood, Birmingham.

[Is our correspondent sure as to the identity of his species? —ED.]

PUPA OF *EREBIA EPIPHRON*.—It may perhaps be of some interest to other entomologists to record the finding of a pupa of *E. epiphron*. In company with Mr. T. Richardson, of Gateshead-on-Tyne, I visited the Lake District of Cumberland during the first week of July, and went to the locality where I had previously taken great numbers of *E. epiphron*. The morning was dull, with a cold south-east wind blowing, so that very few insects were flying, although we found the butterflies we were looking for plentifully, sitting on the grass, and in very fair condition. I, however, found one that had just emerged from pupa, the wings not being dry. I called Mr. Richardson's attention to this one, and we commenced to pull up the sods of grass to try and find the pupæ. These we failed so to find; but after a little more searching I found one that had not come out. This emerged on the 6th of July. I enclose you a drawing of the pupa. We stayed in the locality for three days, but we had only about three hours of sunshine. We took, along with the *E. epiphron*, about thirty *Larentia cæsiata* and fourteen *Emmelesia minorata* (*ericetata*), and many other moths of a commoner kind. I shall be glad to go with other collectors next season if they will let me know, so that we can arrange the time and place to meet. I should like to know if any others have reared *Erebia epiphron* from pupa.—GEORGE DAWSON; 6, English Street, Carlisle.

[The egg, young larva, and pupa of *E. epiphron* are described by Mr. Buckler in his 'Larvæ of British Butterflies and Moths' (i. 33-35); the egg and larva, by Mr. Hellins in the same vol., pp. 171-2. The young larva is figured at Pl. vi., figs. 2, 2a.—E. A. F.]

SPHINX CONVULVULI IN ESSEX.—In my garden I caught with a net, on the 15th inst., a *Sphinx convolvuli*; it is the first I have seen this year. At sugar I am getting nothing but *Mania maura* and *Xylophasia monoglypha*.—THOMAS BELL; Oakwood, Epping, Aug. 22, 1888.

DEILEPHILA GALII IN KENT.—Between July 24th and August 4th I was fortunate enough to capture, near my house, nine specimens of the above-mentioned insect, three of which were very fine, and taken on one evening. Mr. Felix Oswald, who was collecting at the same place, and with whom I became acquainted, also captured eight specimens. One of the worn females laid about a dozen eggs, seven of which have hatched, and I hope to

rear them.—JAMES TRIMMER WILLIAMS; 1, Marine Villas, St. Margaret's Bay, August 8, 1888.

DEILEPHILA GALII AT DARTFORD.—On the evening of August 4th I captured at dusk a rather worn specimen (female) of *Deilephila galii*, hovering over the flowers of larkspur in our garden.—CLEMENT T. YOUENS; Tower Cottage, Dartford, Kent, August 6, 1888.

DEILEPHILA GALII AT FOLKESTONE.—On July 29th I took a large female *Deilephila galii* at rest near here, from which I obtained three ova that hatched on August 8th, and the larvæ are now feeding.—W. J. AUSTEN; Radnor Street, Folkestone.

DEILEPHILA GALII IN ESSEX.—At a meeting of the North Kent Entomological Society, on August 2nd, Mr. Graham exhibited a fine specimen of *Deilephila galii*, which was captured by a boy at Silvertown on July 23rd. A lad knocked it down with his cap, but fortunately it escaped injury.—H. J. WEBB; 3, Gunning Street, Plumstead.

DEILEPHILA GALII IN ESSEX.—To-night I took a specimen of *Deilephila galii*, hovering over a geranium.—P. J. TUDOR; Buckhurst Hill, Essex, August 2, 1888.

DEILEPHILA GALII IN YORKS.—On July 19th a fine specimen of *Deilephila galii* was taken by a gardener at rest on a leaf in a garden in central Scarborough.—H. W. HEAD; Norwood Street, Scarborough.

DEILEPHILA GALII IN YORKS.—On the 26th of last month I took a specimen of this insect hovering over a plant of *Delphinium formosum* in a garden in Harrogate, about 9.15 p.m. The occurrence of this Sphinx in Yorkshire is so rare that I venture to send you a notice of it.—BEN. BLAYDES THOMPSON; Harrogate, August 13, 1888.

DEILEPHILA GALII IN SCOTLAND.—On August 4th I captured a newly-emerged specimen of *Deilephila galii* about two miles from Dundee, hovering over a bed of ladies'-bedstraw. This is the first that I have heard of taken in this district.—PETER KIRK; 14, Wolesley Street, Clepington, Dundee.

DEILEPHILA GALII IN IRELAND.—I have a specimen of *Deilephila galii*, which was caught in my garden here on

July 16th. I cannot find whether it has been caught in Ireland before. Perhaps you could tell me.—GEORGE V. HART; Woodside, Howth, Co. Dublin, August 8, 1888.

CHÆROCAMPA CELERIO IN BERKS.—On Friday, the 3rd of August, I saw a fine specimen of *Chærocampa celerio*, taken in a garden in Reading the day before. I may also mention that the same week, while at Folkestone for my holidays, I saw a specimen of *Deilephila galii*, taken by Mr. Austin, of Folkestone.—W. E. BUTLER; 91, Chatham Street, Reading.

CHÆROCAMPA CELERIO IN BERKS.—On the 1st inst. I captured a beautiful and evidently just-hatched specimen of *Chærocampa celerio* hanging to the stone mullions of the window. Our local entomologists do not recollect its previous capture in this neighbourhood. — GEORGE PHILBRICK; Carlisle House, Reading, August 8, 1888.

SMERINTHUS TILIÆ ABUNDANT.—The larvæ of *Smerinthus tiliæ* seem very plentiful this season. I have taken twenty-three within five minutes' walk of my residence, one of them was feeding on hazel. Six years ago I found twelve fine pupæ in one small bit of garden, but until now I have only met with three or four in a season since. I do not find other larvæ so plentiful here. Last year I took two dozen larvæ of *Vanessa io*, hoping to get some butterflies from them, but they each produced ichneumons. Last month (July) I took about the same number, and only one was ichneumonised. Perhaps the cold, wet season has made all the difference.—F. MILTON; 164, Stamford Hill, N., August 23, 1888.

ASSEMBLING OF MIANA FURUNCULA. — Walking out last Saturday evening my attention was drawn to a quantity of small Noctuæ, apparently attracted by something on a grassy bank. On closer examination I found a male and female *Miana furuncula* in copulâ on the grass, and I should think quite fifty males flying round and over them. I had of course heard of the same kind of thing before, but always understood that the habit was peculiar to the Bombyces, and so thought this worth recording.—WILLIAM FARREN; Cambridge, August 13, 1888.

THE NEW FOREST ZYGENA MELILOTI.—This insect, which had completely died out in its old locality in the Forest, was

re-discovered last month, by Mr. E. G. Meek, in a fresh locality, at some little distance from the previous one. As is usually the case with these isolated colonies of *Zygænæ*, there is a slight difference to be noticed in the specimens when a good series is compared with the old specimens. The difference is in two particulars: 1st, that the border of the hind wings is broader; and 2ndly, that the upper middle spot is long, instead of round, in a larger number of specimens than was the case with the specimens from the old locality, these differences not necessarily occurring in the same specimens. Typical *Z. trifolii* and intermediate forms were flying with them.—C. A. BRIGGS; 55, Lincoln's Inn Fields, August 17, 1888.

PLUSIA CHRYSO IN HANTS.—I took a fine specimen of this moth, near Winchester, on the evening of August 9th. There is much hemp-agrimony near the spot.—F. E. WARNER; Cliff Villa, Sandown, Isle of Wight, August 17, 1888.

THE ABUNDANCE OF PLUSIA GAMMA.—I can fully corroborate the various accounts, recently published in the 'Entomologist,' as to the unusual number of *Plusia gamma* this season. Since the end of May I have noticed them wherever I have been collecting. In the fields they rise at every step; but it is in the garden at dusk that I have seen them in such abundance. One evening, about the middle of June, I counted eighteen specimens hovering over a small patch of *Silene pendula*, while numbers were seen at pinks and other flowers. Many of those I captured were worn, and presented a very washed-out appearance. I should not like to say, positively, that they were hibernators, but their condition seemed to point strongly to that condition.—W. H. BLABER; Sunnyside, Groombridge, Sussex, July 17, 1888.

BREEDING OF BOMBYX RUBI.—Having successfully reared a good many perfect insects of this species from larvæ found last year, I venture to make known the plan I followed, in the hope that it may be of use to others. I got a strong wooden box, about a foot square and the same in depth, and sunk it about four inches into the ground. I then made a frame of wood and nailed some perforated zinc to it for a cover: and having got a good turf with heath growing on it, I planted it in the box, put the larvæ in, and left them to their own devices. They went down into the earth immediately, and re-appeared to spin their

cocoons in April of this year. — C. NICHOLSON; 202, Evering Road, Upper Clapton, E., June 20.

A WEEK AT WICKEN.—Monday, July 9th, I set out, accompanied by Mr. Ernest Joy, to this Fen, with the idea that, after the extremely bad weather, we should be favoured with a fine week, but unfortunately it turned out dull and cold, and sometimes very wet. During the first three or four days there, sugaring was the only means by which we could get anything at all; *Leucania impudens* and *Noctua augur* were certainly plentiful, with an occasional *Aplecta advena*, *Hadena dissimilis*, *H. dentina*, and others. Whenever there happened to be a gleam of sunshine, one or two *Papilio machaon* and *Hyria muricata* were to be seen; but it was not until my friend had left that I came in for any success, as on the Friday morning the sun came partially out, lasting for a few hours, enabling me to capture eighteen fine *P. machaon*, two *H. muricata*, and several *Acidalia immutata*. The following day was exactly similar, and I took the same species. In the evening of these two last days I went out with Mr. Houghton, of Wicken, and sugared a great many grass-knots, to which insects swarmed, completely covering the knots: *L. impudens* and *N. augur* were simply pests, and over a dozen *H. advena* were taken, among others. Mr. Houghton was perfectly amazed at such numbers, and said he had never before seen a greater abundance of moths at sugar. Scores could be seen flying up against the wind like a swarm of bees. He placed his large lamp and sheet at my disposal, which attracted the same moths; also some local species, such as *Collix sparsata*, *Miana arcuosa*, *Herminia cribralis*, &c. Of the latter I obtained a fine series. Before leaving the neighbourhood I managed to find a few *Trochilium apiformis* on trunks of poplars, and several larvæ of *Papilio machaon*, which were easily fed up.—J. M. ADYE; Somerford Grange, Christchurch, Hants, August 18, 1888.

RETARDED EMERGENCE OF SHETLAND LEPIDOPTERA.—I was much interested in Mr. Anderson's note (*ante*, pp. 186, 187) concerning *Eupithecia venosata*. I had a number of pupæ from Mr. Salvage at the same time, but mine all came out between May 20th and June 5th, 1887, not one remaining two years in pupa. On the same occasion, however, I had a number of pupæ of *Emmelesia albulata*, also from Shetland, and of these one

emerged June 11th, 1887, and on the same day I took a number in North Kent. This year (1888) I took the species at large on June 2nd, and was much surprised on June 20th to find a fine suffused Shetland specimen in one of my breeding-cages. This was followed by seven others, the last emerging July 13th, which seems to me a very late date. I have also bred *Ecophora aurimaculella* this month, from pupæ received at the same time (1886), so that it would appear that many Shetland species pass more than one winter in the pupal stage.—J. W. TUTT; July, 1888.

SIREX GIGAS IN HANTS.—Two specimens of *Sirex gigas* have turned up in the neighbourhood of Petersfield. The first was sent me for identification from Harting, where it had been caught in a yard; and the second was knocked down in Adhurst Woods on July 30th. The Harting specimen may have come from some recently-erected telegraph posts; but I cannot account for the other.—H. E. U. BULL; Shirley, Southampton, August 3, 1888.

MALFORMATION: OCNERIA DISPAR.—I have, during the present season, bred a considerable number of the above insect, and have noticed that all the females were more or less crippled; the males, however, which were of course fed up under the same conditions and on the same food as the others, were, without exception, perfect. I should think it is not at all unlikely that the female will gradually become almost as apterous as its relations, *Orgyia antiqua* and *O. gonostigma*. Perhaps some of your readers would kindly state if their experience in rearing *Ocneria dispar* coincides with my own.—W. H. JACKSON; 4, Queen Anne Villas, Grove Road, Walthamstow, Essex.

[“Mr. Enock bred, in the year 1867, upwards of 800 males and females of this species, and nearly all had the under wings notched, as seen in the illustration” (Entom. xi. 170), pl. ii., fig. 7. We cannot, however, endorse the opinion of our correspondent. It is not unusual for certain moths to produce a brood of malformed specimens, while the following broods from such parents come quite true.—ED.]

ABUNDANCE OF HYBERNATED DIURNI.—During the latter part of May and beginning of June *Gonepteryx rhamni* appeared in unusual numbers; a friend writing from Mid Kent, May 31st, says, “To-day, while walking through the woods near here, I never saw so many brimstone butterflies before,—I may say

hundreds, besides many other kinds of butterflies." *Vanessa cardui* and *V. atalanta* I found also very numerous, especially the former. In the cold and backward spring and summer of 1879 *V. cardui* appeared in swarms over different parts of the Continent and the British Isles, and during the autumn they swarmed throughout the country, as likewise *Plusia gamma*. Now both these species this season have been unusually plentiful, which is very interesting and remarkable, as the weather of the spring and summer of 1879 was similar to that of the present year; so in all probability they will occur in like abundance during the coming autumn.—F. W. FROHAWK; Balham, July, 1888.

EXTRACTION OF MOTH FROM PUPA.—The following account of the successful, though unpremeditated, extraction of an imago from the puparium may not be uninteresting. Examining the cocoons of some of the Cork forms of *Spilosoma mendica*, I unfortunately broke the pupa-case of one, and discovered a moth in it. Thinking, after this, that in all probability, if not killed, it would as a specimen be irretrievably ruined, I, yet with some care, peeled off the skin, and got out the imago, which was a female. She was very weak and tottering, but I placed her carefully upon a card, which I tilted against the side of the flower-pot, and, tying over the muslin covering, left the prematurely-born infant to her fate. Returning to inspect her and see how she was getting on, about two hours after, I was much surprised, and pleased, to see that the wings were fully expanded, and that the moth was, in all respects, as fine and perfect as the most fastidious lepidopterist could desire. Now it may be that the imago was upon the point of emerging when I broke open the cocoon and pupa, and so I but hastened its entry into the world; or it may be that the operation saved—for a brief period, it is true, for it was soon converted into a specimen—the moth. It is well known, of course, to all collectors of insects, that although perfectly formed within the puparium, except for the necessary development of the wings subsequent to emergence, it frequently happens that the imago has no power of issuing, and either dries or rots away. It would, doubtless, be a very hazardous proceeding thus to "help" the birth of our specimens; but the idea is suggested whether many a rare insect might not thus be saved if, and there is the rub, one only knew when to adopt it at the nick of time. Since writing the above I

have again, and quite accidentally, taken another moth from the pupa; this time it was *Lithostege griseata*. It was a very active insect, running about the cage with much restlessness, and for a time I thought a deformity would be the result; but after leaving it for about two hours, upon my return I was rewarded by seeing a fine, perfectly developed specimen. I am not sure but that at times the disturbance of a recently-emerged imago is beneficial rather than injurious, the movements of the insect being conducive to the proper development of the wings; at least it has seemed to me, from the length of time in some cases which has elapsed before the wings commenced expanding, that had I not given the insects a little "stir up," instead of good specimens I should have had cripples.—JOSEPH ANDERSON, jun.; Chichester.

SEASONAL DIFFERENCE IN *TEPHROSIA*.—In some previous notes in the 'Entomologist' concerning the breeding of the July brood of *Tephrosia crepuscularia* or *biundularia*, obtained from ova by imagines found in April of last year, I stated that five pupæ had not emerged and were apparently living; I would now add that these have not come to anything, having, if alive, decayed in the winter. The results therefore obtained are as follows:—the July brood were bred from ova obtained in April of the early form, and the July specimens thus obtained, with the exception of being smaller in size, resemble the late pale forms. This season I have noticed during last month many of the early and late forms at the same time. On May 15th I captured a small pale example, not larger than that of the July brood. May it be possible that the early and late forms are one and the same brood, the late ones being affected by temperature before emergence? Is not the different temperature and season of the year the cause of the difference in the July specimens of this moth, as well as in those of *Selenia bilunaria*?—T. B. JEFFERYS; Clevedon, June 4, 1888.

ERRATUM.—P. 208, five lines from the bottom, for *pallida*, read *pallesceus*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—August 1st, 1888. Dr. D. Sharp, F.L.S., President, in the chair. The Rev. R. Walton-Lewis, B.A., of Cape Colony, was elected a Fellow of the Society.

Mr. F. D. Godman, F.R.S., exhibited a large number of species of Lepidoptera and Diptera recently collected for him in Mexico by Mr. Herbert Smith. Mr. White exhibited a specimen of *Osmylus maculatus*, taken by him on the Stort, near Sawbridgeworth, in July last. He also exhibited parasites bred from *Bombyx neustria*, and a living example of *Heterodes guyoni*, found at Dartford, and believed to have been introduced with Esparto grass from Tunis. Mr. Enock exhibited a stem of barley showing the appearance of the plant under an attack of Hessian Fly. Mr. Stevens exhibited a number of galls collected at Byfleet, Surrey, in July last, by Mr. Leonard Stevens; also a specimen of *Coleophora solitariella*, with ichneumons bred from it. Mr. Edward Saunders exhibited a specimen of *Catephia alchymista*, captured by his son at St. Leonards, in June last. He also exhibited specimens of a rare Ant (*Anochetus ghiliani*), which were taken at Tangier by Mr. G. Lewis. One of these he had submitted to Dr. Emery, of Bologna, who thought that, although ocelli were present, the specimen was probably intermediate between a worker and a female, and that possibly the true female did not exist. Mr. Pascoe exhibited a number of species of Coleoptera recently collected in Germany and the Jura Mountains, and read a note correcting the synonymy of certain species of *Brachycerus* recently described by him in the 'Transactions' of the Society. He stated that the corrections had been suggested by Mons. Peringuey and Mons. Aurivillius. Prof. Westwood communicated a paper entitled "A List of the Diurnal Lepidoptera collected in Northern Celebes by Dr. Sydney Hickson, with descriptions of new Species."—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 26th, 1888. John T. Carrington, Esq., F.L.S., Vice-President, in the chair. Mr. T. Stanton Hillman, of Lewes, was elected a member. Mr. Frohawk exhibited the white-banded variety of *Sesia culiciformis*, taken by him at West Wickham, June, 1887, shortly afterwards recorded in 'The Field,' and referred to by Mr. Cockerell in two communications read before the Society on the 14th June and 12th July, 1888. Mr. Tugwell remarked that it was the first white-banded specimen of this species he had seen. Mr. West (Streatham), *Dianthæcia capsincola*, bred from larvæ found on sweet-williams in his garden.

Mr. R. Adkin, short series of *Zonaria orbicularia*, inbred from New Forest larvæ, the specimens showing a good deal of variation; also living larvæ of *Thera firmata*, remarking on their close resemblance to the pine-needles; and of *Tephrosia punctularia*, the larvæ, when first hatched, being all of a green colour, and, after moulting, several had become of a mottled brownish colour, while others were green. Mr. E. Joy, *Leucania impudens* from Wicken Fen. Mr. Robson, a variety of *Argynnis euphrosyne*, the silver markings on the under surface being very prettily distributed. Mr. Tugwell, two specimens of *Eupithecia extensaria* from King's Lynn, and made observations thereon; also specimens of *Melanippe fluctuata* and the var. *costorata*, which he thought had no claim to a varietal name. Mr. Carrington, a specimen of *Sirex gigas*. Mr. West stated he had on several occasions seen this species drying its wings on willow-trees.

August 9th.—The Vice-President in the chair. Mr. R. Waller, of Clapham, and Mr. Y. N. Younge, of Rotherham, were elected members. Mr. Cook exhibited a variety of *Smerinthus tilie*, the lower part of the central band on the central wings being absent. Mr. Wellman, bred examples of *Plusia chryson* and *Eugonia autumnaria*, and said he had bred nine females and only two males of the latter. Mr. Joy, bred specimens of *Geometra vernaria* and *Pseudoterpna pruinata*. Mr. C. A. Briggs, *Zygæna meliloti*, taken this year in the New Forest. Mr. Robson, living larvæ of *Panolis piniperda*. Mr. Carrington, specimens of *Boarmia repandata* and *Venusia cambrica*, sent for exhibition by Mr. Batty, of Sheffield, and called attention to the melanic appearance of the specimens. This exhibit gave rise to a discussion on melanism, Messrs. Weir, West (Greenwich), Step, Carrington, and others taking part. Mr. West (Streatham), a short series of *Homæosoma sinuella*, taken near Brighton. Mr. Weir, an example of the imago of *Myrmeleon europæus*, bred by him from larvæ taken at Fontainebleau in 1887. Mr. Carrington made some observations on a fortnight's collecting on the Chiltern Hills, and as to the late appearance of many species of Lepidoptera. Mr. J. Jenner Weir read an extract from a letter he had received from Mr. Cockerell, dated the 21st May, 1888, referring to Mr. Cockerell's theory that *Gonepteryx rhamni* and *G. cleopatra* originated as seasonal races, or, as Mr. Weir said he should term it, horecomorphic races.—H. W. BARKER, Hon. Sec.

REVIEWS.

Micro-Lepidoptera of Suffolk. Pamphlet by the Rev. E. N. BLOOMFIELD. Printed by Daniel & Co., St. Leonard's-on-Sea, 1888.

It is always pleasing to meet with anything from the pen of this veteran entomologist, and although this is little more than a mere list of species occurring in the county of Suffolk, it will be useful as a basis for a fuller work at a later period. Even in its present form it should be known by those working in Suffolk; and we hope that at a later period, when the remainder of the list of the Lepidopterous fauna of the county is published, the notes will be largely amplified. Having this in view, it would greatly help Mr. Bloomfield, if those who possess the material will forward it for incorporation in the larger list, to his address, Guestling, Hastings.—J. T. C. _____

The Flora of Sussex. By the Rev. F. H. ARNOLD, M.A., LL.B. London: Hamilton, Adams & Co. Chichester: Wilms-hurst. Price 3s. 6d.

THIS Flora, the cheapest of the County Floras yet published, may be of great use to Entomologists, as containing the habitats of the food-plants of many rarer Lepidoptera. Amongst these Sussex flowers may be mentioned the strong-scented lettuce (*Lactuca virosa*); the wild liquorice (*Astragalus glycyphyllos*), said to be the food-plant of *Xylomiges conspicillaris*; the black mullein (*Verbascum nigrum*), which is almost confined to the western part of Sussex; the deadly nightshade (*Atropa belladonna*), which abounds at Harting; and the winter evergreen (*Pyrola minor*), at Colworth.

By the banks of several streams grows the great water-dock (*Rumex hydrolapathum*), a food-plant of *Polyommatus dispar*. And by the way it may be noted that a startling rumour was lately current that one had been taken in Hampshire, close to the Sussex border. Anxious enquiry proved that this was correct; but the captor had obtained the coveted prize from the cabinet of an old collector, and the specimen had formerly inhabited Whittlesea Mere. The 'Flora of Sussex' is a portable little volume, well suited for the pocket of the explorer. It enumerates the plants of the adjacent counties as well as those which occur in the county itself.—J. A.

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COLLECTING DIPTERA.

BY E. BRUNETTI.

To the true entomologist the study of the Diptera should possess attractions not shared by that of the Lepidoptera nor the Coleoptera, from the very fact of the species being less well known; it consequently offers greater opportunities for rendering real service to science.

Specimens of Diptera should always be brought home alive, if possible in pill- or chip-boxes, and killed by the fumes of burning sulphur or strong ammonia. No method that *wets* them should ever be adopted, as the pubescence once matted together, frequently, if not always, prevents the identification of the species.

For purposes of study,—so long as the legs are not allowed to cluster together close under the body, and the wings are kept from crossing so as to hide the venation and the upper side of the abdomen,—Diptera are as useful unset as set, and by not setting them a considerable amount of time is saved. Moreover, they are not so liable to accident, and do not take up so much cabinet space. I prefer the long Carlsbad pins, because the insects are easier to handle when pinned with them, and because they allow a higher magnifying power to be used when in the cabinet. Again, they are more easily exchanged with continental correspondents, who invariably use Carlsbad pins, and never set their dipterous specimens. Should, however, collectors desire to set them, let me advise them to keep the insect at least half to three-quarters of an inch from the point of the pin, which should

pierce the thorax (not the abdomen), to place the wings *horizontal*, inclining slightly forward, and to keep two pairs of legs behind the wings.

Diptera are very abundant on any warm day from early spring to late autumn. They may be taken in less numbers on cloudy, and even cold, days. Through the winter there are species of *Nemocera* to be found, so that the collector can occupy himself from one year's end to another.

A knowledge of the habitat of each family is essential to systematic and successful collecting, and the sooner the entomologist who embraces the study of Diptera learns these the better. Again, many groups have a special manner of taking flight and of behaving when on the wing, so that acquaintance with these various peculiarities is necessary, as the chance of a second stroke of the net with most species is rarely offered.

I shall now mention the various families in systematic order, giving the habitat of each.

STRATIOMYIDÆ: 44 species.—The larvæ live in decaying vegetable matter or in the earth. The flies appear on aquatic plants; their flight is slow. One genus, *Beris*, frequents woods and flowers.

XYLOPHAGIDÆ: 4 species.—All rare; sluggish flight. Larvæ feed on decayed wood.

TABANIDÆ: 20 species.—Found in woods; flight rapid, accompanied by a low hum. The females of many species attack cattle, drawing blood by means of the large and powerful proboscis.

BOMBYLIDÆ: about 9 species.—Inhabit warm dry localities; appearing in summer; flight swift and humming. Some larvæ live in earth, some are parasitic on lepidopterous insects. Rather rare.

ACROCERIDÆ: 2 species.—Globular, soft insects; venation indistinct; head nearly all eyes. Found on flowers or tree-trunks on sunny days. Rare.

SCENOPINIDÆ: 2 or 3 species.—Sluggish flies; found in houses, hot-beds, and about plants. The larvæ live in rotten fungi.

THEREVIDÆ: about 6 species.—Found in sandy spots; some are carnivorous; flight sudden and very swift. The larvæ live in the ground. Mostly uncommon. The sexes differ in the colour of their pubescence.

ASILIDÆ: 19 species.—Large, powerful carnivorous flies; found in woods and pastures; the larvæ live in the earth; flight

silent and rapid; some species frequent sandy places. Chiefly from the south coast. Not uncommon.

LEPTIDÆ: about 12 species.—Frequenting hedges, woods, thickets. The larvæ are found in the earth in sand or decayed wood; the larva of one species is aquatic. Some species inhabit marshes and ditches.

EMPIDÆ: about 180 species.—Found in ditches, fields, moors, woods, and on the banks of streams. Mostly carnivorous. Many species swarm on fine evenings over streams. Some species inhabit dry herbage, running with great swiftness over the leaves; some on hotbeds; a few on the sea-coast. Mostly common.

DOLICHOPODIDÆ: about 160 species.—Predaceous. Running on the surface of ponds with great ease. Mostly carnivorous. Some frequent dry shady places, congregating in small troops. Several genera comprise very minute brilliantly-coloured species. Some species inhabit the sea-coast, and a few appear only in hot sunshine. Mostly common, nearly all the species being brightly coloured.

SYRPHIDÆ: about 210 species.—Brilliantly-coloured flies, very common, many resembling bees and wasps; flight swift, with a shrill hum, the flies hovering in the air motionless above a flower, and darting in any direction with great swiftness, usually returning again and again to the same spot. The larvæ live in stagnant water, decomposing matter, mud, &c. The perfect insects suck the juices of flowers. Occasional swarms of Syrphidæ have been recorded, in which several species often take part.

CONOPIDÆ: 17 species.—Frequent flowers, the larvæ being parasitic on bees. Chiefly from the south coast. All the species are more or less rare, many resembling wasps, from the contracted first abdominal segment. Some are taken on sandy banks. I am working up all the European species of this family, and any correspondence on this group would be especially agreeable.

CESTRIDÆ: 6 species.—Parasitic on horses, sheep, oxen, and deer. All difficult to obtain from the rapidity of their flight, and the impossibility of breeding them. If the larva is removed from the animal on which it is living, it is certain to die. The larva takes about eight months to attain its full development.

MUSCIDÆ: about 950 species.—Nearly half the known European species of Diptera fall in this family, and it will be advisable to notice each subfamily successively.

1. *TACHININÆ*: about 120 species.—Usually found in warm dry habitats, being partial to umbelliferous flowers. Most, if not all, are parasitic, chiefly on Lepidoptera, and collectors of this order would greatly assist the students of Diptera by pinning all that may emerge from their lepidopterous pupæ, and attaching date and name of species of moth to each specimen. Walker's references to the Tachininae and Anthomyinae are practically useless.

2. *DEXTINÆ*: about 12 species.—Their habits are very similar to those of the previous group. Common.

3. *SARCOPHAGINÆ*: 21 species.—Large powerful flies; common everywhere. The females are viviparous. The species appear very much alike, but the specific characters are very distinct.

4. *MUSCINÆ*: about 30 species.—The larvæ live in dung, or rotten vegetable matter. Most of the species are common; their flight is swift. Several of the species are found in London, and act as natural scavengers, probably more so than any other group of the Diptera.

5. *ANTHOMYINÆ*: about 230 species.—The larvæ of this sub-family live in rotten fungi, decomposing vegetable matter, &c.; many species are leaf-miners, and damage the crops to no inconsiderable extent. These flies are very common, frequenting every field, wood, and bush, and are as a rule very closely allied, the females being especially difficult to identify.

6. *ACALYPTERATA*: about 530 species.—This group appears to me theoretically inseparable from the Anthomyidæ, as the distinctive characters, so called, insensibly merge one into the other. Nearly all these flies are small, many exceedingly so, and as a rule are sombre in colour, closely allied, and consequently difficult to identify. Schiner recognises 26 groups in this sub-family. They may be obtained in very great abundance by sweeping. The larvæ live in decomposing animal and vegetable matter, dung, mud, water, galls, leaves, plant-roots, cereals; and the perfect insects may be taken in almost every conceivable situation.

PHORIDÆ: about 8 species.—The larvæ live on decomposing vegetable matter. One or two species are common in London.

PLATYPEZIDÆ: about 10 species, I think, are British.—This and the next family have been moved about a good deal from one position to another in classification by various authors.

They are found in woods, the larva inhabiting fungi, and (of one species at least) resembles a seed. Not common.

PIPUNCULIDÆ: about 10 species are British.—Inhabiting woods and fields, some species hovering in the air. Not common.

CECIDOMYIDÆ: about 100 species.—Walker has introduced a large number of species; whether they are really British or not remains to be seen. Winnertz is the authority *par excellence* on this group. The larvæ live in plants; the flies are delicate, small, and closely allied; occurring in fields, gardens, and orchards.

PSYCHODIDÆ: 7 or 8 species.—These resemble small moths, the wings being fringed. Very small flies. Two species are found in houses. Larva aquatic. One or two species appear in midwinter.

CULICIDÆ: about 12 species.—Larva aquatic. Delicate flies (gnats), with a complicated and powerful proboscis. Some of the older authors have published the life-histories of several species. Common on summer evenings, swarming under tree-boughs. The numerous veins in, and fringe to, the wings separate this family easily from the next.

CHIRONOMIDÆ: about 270 species.—A most difficult group to work out. All the species are small and very delicate, their habits being very similar to those of the Culicidæ. Walker describes the larva of two common species. Many species are abundant at sunset, and may be taken from spring to the end of autumn.

BIBIONIDÆ: about 20 species.—These flies are chiefly vernal, often appearing for a few days only. The males hover in the air. Larvæ worm-like, living in the earth. A correspondent recently sent me a very common species, *Dilophus vulgaris*, bred from *Calceolaria*. The species are tolerably distinct.

SIMULIDÆ: about 5 species.—Larva aquatic. Some species inhabit sandy spots. Not very common.

MYCETOPHILIDÆ: about 170 species.—The larvæ feed on fungi, and frequently spin silken webs. The flies chiefly inhabit woods, some species occurring in the middle of winter. They are rather small, of delicate structure, and are tolerably common.

TIPULIDÆ: about 170 species.—The larva lives in decaying vegetables, in fungi or rotten wood, some being aquatic. The flies (daddy-longlegs) are delicate in structure, flying in swarms under trees overhanging streams, especially in the evenings; on marshy banks, and in grassy fields; one or two species doing

considerable damage to the crops whilst in the larval state. Some species occur chiefly in woods.

DIXIIDÆ: 2 or 3 species of this small group are British.—Their habits and appearance are similar to those of the Tipulidæ.

RHYPHIDÆ: 3 species appear to be British.—They feed on over-ripe fruit, the larvæ living in dung.

HIPPOBOSCIDÆ: 3 or 4 species of this family are British.—They are parasitic on animals and birds; their development is immature; and all the species are more or less uncommon.

NYCTERIBIIDÆ: 1 or 2 species are British.—Their habits are similar to those of the preceding family; but this family is apterous.

LONCHOPTERIDÆ: about 8 species are British.—They are small, delicate, active flies, occurring in fields and woods in spring.

A linear arrangement of families is impossible, and authors differ to some considerable extent in their opinions as to the positions of several of the families.

In the above series of notes, I have adopted Schiner's order, with one or two modifications. A few writers include the Pulicidæ (fleas) in the Diptera; but I fail to see their right to a place in this order.

Works on British Diptera are very few, and also difficult to obtain. Walker's 'Insecta Britannica,' Diptera (3 vols.), and Curtis's 'British Entomology,' Diptera, are the two best; but the former is quite useless for studying some of the groups, and both of them are incomplete, and introduce many species that are not British. Schiner's 'Fauna Austriaca,' Diptera, is undoubtedly the best work on European Diptera, but being in German many students may find it a sealed book.

I think the notes given above should be found sufficient as a basis to anyone thinking of adopting the Diptera as a special study, or even taking a partial interest in them.

To those who desire further information, I will willingly render all the assistance that lies in my power, and shall be glad to name any specimens submitted to me for that purpose.

I would finally appeal once more to *all* entomologists to take all the Diptera that come in their way, even if they do not care for the order. The specimens captured would be most welcome to those taking an interest in the Diptera. Collectors will be thus rendering real assistance to science.

MELANISM IN LONDON LEPIDOPTERA.

By J. W. TUTT, F.E.S.

A NOTE, written by my friend Mr. T. D. A. Cockerell (Entom. 60), relating to a statement (Entom. xx. 202), to the effect that there was no London melanism, has produced a few communications about the matter, which I deem very unsatisfactory, considering the number of London lepidopterists and the sweeping assertion made. All our correspondents, so far, who have given instances of London melanism, have confined their attacks to one little species, *Miana strigilis*, which is frequently melanic in all parts of the country, and generally so in certain of the Northern and Midland counties of England.

There is no doubt that the assertion about London melanism was made on altogether insufficient data. In one group alone, the Noctuæ, a large percentage of cases of melanism or partial melanism occur, the following, among others, having come under my own notice:—

Acronycta psi var. *suffusa*.* The type does not occur in London; the dark variety only is found.

Leucania comma var. *suffusa*.* The forms occurring in the Greenwich district are altogether darker than more northern specimens.—*L. straminea* var. *nigrostriata*.* A small percentage of London specimens are thickly sprinkled with black scales between the nervures.—*L. impura* var. *fuliginosa*,* Haw. This is the common form of *impura* in London, where the pale type is almost unknown.—*L. pallens* var. *suffusa*,* St. This variety occurs occasionally in the London reed-beds with the type, the spaces between the nervures being much suffused with dark scales.

Hydræcia micacea var. *brunnea*. Some London varieties, which I have bred from roots of dock, are of a rich brown colour.

Xylophasia monoglypha. Deep brown varieties occur frequently on the marshes.

Mamestra abjecta. Only the dark var. *nigricans* is taken in London, so far as I know. I have never captured the variegated

* *Vide* Entom., vol. xxi. Series of papers on "Varieties of Noctuæ."

form in the London district.—*M. sordida*. Many London specimens are of a dark grey colour, without any of the paler ground colour of the type.

Apamea basilinea. I have a very dark purplish brown specimen captured in London.—*A. gemina*. The dark type is as frequently taken in London as any part of the country in comparison with the paler ab. *remissa*, Tr.—*A. leucostigma*. I have only taken the dark unicolorous form in London, never the streaked and more variegated variety *fibrosa*, Hb.—*A. didyma*. The black variety, ab. *leucostigma*, Esp. (*lugens*, Haw.) is very frequent.

Miana strigilis var. *æthiops*, Haw. Exceedingly abundant in most places, as is also the dark reddish var. *latruncula*.

Rusina tenebrosa. I have London specimens as dark as those from Rannoch, which are much darker than the type.

Agrotis segetum var. *nigricornutus*, Haw. This black variety is excessively abundant, as is also the dark variety, *subatratus*, Haw. — *A. nigricans*. Darker specimens occur in my own neighbourhood than I can obtain from any other English locality (except the Lancashire coast), but not so dark as the Scotch type.

Aplecta nebulosa. Some specimens of this species are very dark.

Hadena trifolii. I have a number of London specimens which are very dark in colour.

Among the Geometers we find a large proportion showing a tendency to melanic variation. The following are some of the cases :—

Nyssia hispidaria. Sometimes exceedingly dark specimens are captured in Richmond Park.

Hemerophila abruptaria. Very dark suffused specimens are occasionally captured.

Boarmia gemmaria var. *perfumaria*, Newm. This latter variety is a melanic form almost confined to the London District.

Acidalia virgularia. Exceedingly dark specimens are occasionally captured.

Hybernia leucophearia. Black specimens frequently occur throughout the London District.—*H. defoliaria*. Very dark (almost black) specimens are very frequently found.

Oporabia dilutata. A large, almost unicolorous, dark grey form is abundant in the S E. District.

Eupithecia vulgata. Generally much darker in London than in other parts of the Kingdom.—*E. rectangulata*. A splendid black variety, *nigrosericeata*, is abundant in the London District. This is a fine melanic form, the males being of a deep smoky black, the females of a deep dark green, with black markings. It is very different from the type. I have captured a large number of this species in London, but all are of this variety; the type does not seem to occur.

Melanippe fluctuata var. *neapoliata*, Mill. A small proportion of the specimens of this species closely resemble the dark variety named above.

In other families *Botys ruralis* is much darker in the London District than a few miles out; whilst melanic forms of *Chilo phragmitellus* not infrequently occur. *Crambus perlellus* var. *warringtonellus* is abundant, whilst perfectly melanic forms of *Tortrix podana*, *Hedya ocellana*, and *Grapholitha nævana* are very frequent. A dark form of *Xanthosetia zoegana* is almost peculiar to the London District. *Diurnea fagella* is sometimes very dark, almost equalling in depth of colouring the well-known melanic Yorkshire specimens. Many other species show a greater or less tendency to vary in the same direction, but I think I have given sufficient examples to show that London melanism is not the minus quantity it has been represented.

I believe almost every instance of London melanism to be what I would call "protective melanism," and not to be classed with the melanism of the North of England and the west coasts of Scotland and Ireland. As an explanation of this latter, I believe Mr. Cockerell's theory, coupling melanism with local humidity and rainfall, to be by far the most reasonable view which has yet been presented to us.

Rayleigh Villa, Westcombe Park, S.E., August, 1888.

DEILEPHILA GALII IN 1888.

BY JOHN T. CARRINGTON, F.L.S.

AMONG the more remarkable and least-understood phenomena in the life-histories of insects is the periodical appearance of certain species. Seldom a year passes without its being celebrated

among entomologists, no matter what group studied, for the unusual abundance of some special species.

The lepidopterologists have *Deilephila galii* this year as their red-letter moth. In July numerous imagines were captured in many parts of these islands, extending from the south coast of England to Scotland, and from Scarborough on the east coast to Ireland. In recent years, with the exception of in the year 1870, when it occurred in some numbers, in the larval state especially,—for instance, on the Cheshire sand-hills,—it has been counted among the rarer species inhabiting the British Islands.

All sorts of speculation are rife upon the cause of this unusual appearance of *Deilephila galii*. The migration theory is the one first set up, and may possibly be the cause of this extraordinary abundance. There are, however, other suggestions worthy of consideration; for instance, the long lying-over of the pupæ, for some fortuitous condition of atmospheric influence, suitable for the emergence of the moths. We all know how the pupæ of many Lepidoptera in captivity do remain alive, but unemerged, for years. How much more likely are they to remain in a state of nature, even for longer periods. There, the chance of safety is greater than in the artificial state of captivity. The fact of being kept too dry or too damp, or accidentally disturbed when all are thought to have emerged or to be dead, generally causes disturbance of Nature's rules with our captive pupæ. We are, perhaps, too ready to turn to the migration theory, because it is one easily understood; but it does not seem wise to put every unusual appearance down to the "blown-over theory." That migration does take place none can doubt, even on great continents. Again, no one can doubt that there are cases of unusual and periodical extraordinary abundance of certain species; with the converse of years of remarkable scarcity. Take, for instance, the flights of innumerable specimens of *Annosia plexippus* on the continent of North America. That species occurs every year in certain localities, but on some occasions in such numbers as to surprise even the uninitiated in those places. It cannot be migration in such instances.

Deilephila galii is said to occur every year on the Deal sand-hills in the larval condition, but usually in very small numbers. About thirty years since Mr. Boswell-Syme captured a large number of the larvæ there, and was then enabled to add specimens

to most of the collections of his friends. This year it has been taken in that locality by many hundreds, if not actually by thousands. Again, in smaller numbers at Shoeburyness on the Essex coast; also further north on the Suffolk coast; and at Cromer in Norfolk. All this favours the "blown-over theory," for those localities are next the Continent. These larvæ have, however, occurred this year numerously on the Wallasey sand-hills on the Cheshire coast, which is far away from continental influence. This, be it marked, is one of the old localities for *Deilephila galii*. Perhaps my friends, who favour migration as a solution of the problem, will suggest that some subtle instinct orders a very small number of continental moths, of this species, to proceed direct to Wallasey to deposit their eggs. This, it must be allowed, is only an intermittent effort of instinct, for they are not supposed to migrate annually. One can understand the heredity instinct of migratory birds, because the young return year after year for countless generations to the same locality where they were hatched. That cause cannot be claimed for unusual migration of insects, with many years' interval.

Perhaps the true moral to be drawn from the abundance during 1888 of *Deilephila galii* in this country, is connected with the fictitious value of "British specimens." If these moths were "blown-over," they are continental specimens, and the larvæ, which have been so assiduously searched for, are from "continental parents," just as much as if the ova had been sent from France and Italy by post. Again, if the moths of this species which have been taken in these islands are truly British born, they have for years to come destroyed the money value of *Deilephila galii*; for who is to tell whence all come that will be put on the market from time to time as specimens of 1888? If it should cause English entomologists to look with even the least more favour on the abolition of caste as between continental and British specimens, the abundance of this handsome moth, in 1888, will be a cause of thankfulness to future generations of students of Entomology, who will study the fauna of this country with less insular prejudice.

London, September, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

(Continued from p. 229.)

Calamia, Hb., *lutosa*, Hb.

The type of this species is represented by Hübner's fig. 232, which may be described as having the anterior wings pale ochreous with whitish nervures, the posterior wings grey with dusky nervures. There are no traces of spots on any of the wings. The type is rare in England, though the varieties are abundant. The variation in colour of this species is very great. It varies from pale ochreous to deep red. Some specimens are much irrorated with black scales. From the type, with no transverse rows of spots, we find every gradation to a complete row extending across both the anterior and posterior wings. The variation in size is remarkable. I have specimens of var. *pilicornis* not larger than *pallens*; I have specimens of vars. *cannæ* and *crassicornis* larger than my largest *arundinis*. Mr. Dobrée writes:—"It is a common insect in some years near Beverley, both in the type and all the varieties of size and colour, including very handsome specimens (var. *crassicornis*) with the three dark longitudinal shades very sharply defined and quite black" (*in litt.*).

α. var. *crassicornis*, Haw. — Treated by our early British lepidopterists as a distinct species. Haworth's original description is:—"Alæ anticæ subfulvo alboque venosæ, atque cinerascens ex punctulis minutissimis numerosissimis fuscis, absque lente vix conspicuis, punctisque aliis circiter sex majoribus posticis, in strigam arcuatam dispositis. Alæ posticæ fusæ ciliis lutescentibus." ('*Insecta Britannica*,' p. 173) This name is given to those wainscot-brown specimens which are thickly irrorated with fuscous scales, with a distinct transverse row of black dots on the anterior wings and continued on the posterior. The minute fuscous atoms form three very distinct dark longitudinal shades, one extending on either side of the median nervure, another extending from the base just under the costa, a third just above, but parallel with the inner margin. Hind wings dark grey, with a transverse row of dots. The spaces

between the nervures of the anterior wings also much suffused. I have this variety from Clevedon (Somerset) and Beverley (Yorks).

β. var. pilicornis, Haw.—This name was given by our early British authors to those specimens which had the anterior wings pale ochreous, and but little irrorated with black or fuscous scales. This variety was first described by Haworth in the 'Trans. Ent. Soc.,' old series, p. 336, as a distinct species. These paler specimens often have the transverse rows of dots very indistinct, and more nearly approach Hübner's spotless type. Some specimens of this are very small. I have some from East Yorkshire not larger than *pallens*. Mr. Mason (Clevedon) informs me that this is the most common form in his district.

γ. var. cannæ, Steph. (non Och.).—Red varieties of this species were incorrectly referred to the *cannæ* of Ochsenheimer, which is a totally distinct species, by the early British authors. The anterior wings of this variety are deep reddish ochreous, sometimes sparingly, sometimes thickly, irrorated with dusky atoms, with the transverse row of dots more or less distinctly marked. My specimens of this variety have come from Somerset, East Yorkshire, &c., and vary much in size. For the splendid series of var. *crassicornis* and var. *cannæ* I have, I am largely indebted to Mr. Mason, of Clevedon, who has been exceedingly good to me, not only by giving me a large number of specimens, but also a great deal of information. "Stephens' description of *cannæ* is:—'Expanse, $1\frac{2}{3}$ inches. Head and thorax pale reddish or yellowish ash; anterior wings the same, with a few minute dusky atoms, with some larger spots at the base, and a row still more distinct towards the hinder margin, and forming an arcuated striga; in the middle of the disc is a single spot of similar hue; posterior wings reddish or yellowish ash.'"—Humphrey & Westwood's 'British Moths,' vol. i., p. 215. It is advisable to remember that this description was written at a time when the species was almost unknown in Britain, isolated examples in one or two cabinets being all that the British collectors then had.

Calamia, Hb., *phragmitidis*, Hb.

Hübner's fig. 230 (by error 330) represents the type, and is excellently drawn. It has the anterior wings clear whitish ochreous, with the outer half of the wings to the hind margin

reddish; the hind wings grey, the upper (anal) angle paler. This is intermediate between two extreme forms, one with the whole of the anterior wings without the slightest trace of reddish, the other with the anterior wings entirely red. There is a great deal of difference also in the size of different specimens. I have some specimens exceedingly small of both the following varieties, as well as the type.

α. var. rufescens, mihi.—The anterior wings entirely suffused with rich deep red, the hind margin being slightly darker. The hind wings bright shiny grey, with paler nervures. In my opinion this is one of the finest varieties in the family, and I have a very fine series in my collection, captured on the banks of the Thames in North Kent. The form is local and rare, and I have rarely taken it in localities even where the type is abundant, although Mr. Dobrée writes that it is “equally common at Beverley as the type.” It occurs sparingly at Wicken, whence I have received it from Mr. Farren. The type is rare on the Continent, and the variety, I believe, almost unknown. This variety is figured in Humphrey & Westwood’s ‘British Moths,’ pl. xlvii., fig. 16.

β. var. pallida, mihi.—Of a pale unicolorous, whitish ochreous colour, with a slightly greenish tinge, perfectly clear and unspotted, and no trace of red. This is the commonest form of the species, being much more abundant than the type and *var. rufescens* in all localities where I have found the species. It is also the common form at Wicken.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN KENT.—On August 22nd I received a letter from my friend Mr. J. Wood, of Chatham, written the day previous, stating:—“To our great surprise this morning we saw a Camberwell Beauty in the garden, feeding on an over-ripe gooseberry which had fallen from the bush. We watched it for some time, it looked so beautiful. It flew up, and actually settled on me and then on my sister.” Upon receiving this news, and knowing the habit the Vanessidæ have of returning day after day to sweets, I arrived at my friend’s house about midday, and was glad to hear it had been seen again feeding upon the gooseberry

that morning, and I had the fortune to secure it while settled on a gravel walk. It is a fine specimen, $3\frac{3}{8}$ in. in expanse, and very richly coloured; the margins are of a straw-yellow colour. With the exception of the margins being slightly chipped, it was, apparently, freshly emerged.—F. W. FROHAWK; Balham, S.W., August, 1888.

VANESSA ANTIOPA IN KENT.—It may not be uninteresting to record the capture, in the window of a chemist's shop in Margate, of a very fine specimen of *Vanessa antiopa*. From its freshness I should say it could not have long emerged; and the border is lighter, and size slightly larger, than that of the usual continental specimens. I have never heard of a specimen being caught in this neighbourhood, though Coleman gives Ramsgate as one of the places of its capture.—F. STANLEY; 6, Clifton Gardens, Margate, September 7, 1888.

VANESSA ANTIOPA IN KENT.—A specimen of this butterfly was captured on August 31st. by the son of the station-master of the Warren Station of the S. E. Railway, near Folkestone. I saw the insect just as it was being pinned, and it is now in my possession. Owing to its having been captured with the boy's cap, the specimen is somewhat rubbed, though otherwise perfect. It may be of some interest to mention that on the same day I took a female specimen of *Argynnis aglaia*, drying its wings; on September 5th, over a dozen specimens of *Melanargia galatea* were noticed, drying their wings; and up to the time I left the locality, although I was looking for the species, I only saw a solitary example of *Lycæna bellargus*.—H. W. BARKER; 83, Brayard's Road, Peckham.

FOOD OF VANESSA POLYCHLOROS.—The larvæ of this species, according to my observation, generally feed on elm, and on branches rather high up, frequently towards the end of their life-time committing such devastation as to render the branch very conspicuous through absolutely stripping it of its leaves. I have also occasionally found the larvæ feeding on willow of various species, but I was hardly prepared for finding a nest, as I did on July 10th of this year, feeding on a low branch of a white-heart cherry tree, in a private garden situated in the town of Brentwood. Although Newman, in his 'British Butterflies,' records cherry as a food-plant, I think *Vanessa polychloros* eats it so rarely as to

make a modern instance worthy of record in your pages.—(Rev.) GILBERT H. RAYNOR; Fairview, Brentwood, August 28, 1888.

THECLA W-ALBUM IN GLOUCESTERSHIRE.—I can corroborate Mr. C. F. Thornehill's statement (Ent. 184) as to the abundance of *w-album*. On Saturday, June 16th, I took fifteen larvæ of this insect, and Mr. E. B. Poulton and the Rev. A. G. Butler took several more; on Monday, June 18th, I secured twenty-seven larvæ, nearly all full-fed; and on Saturday, June 23rd, I took one spun-up pupa, and saw several more out of reach. All these were taken on wych-elm, and they seemed to exhibit a decided preference for the boughs bearing fruit.—M. STANGER HIGGS; The Mill House, Upton St. Leonards, Gloucestershire.

THECLA W-ALBUM IN CHESHIRE.—My son caught two bad specimens of this butterfly on August 30th, in the parish of Malpas, in Cheshire. As I have never read of its occurrence so far west as this, I place the fact on record.—C. WOLLEY DOD; Edge Hall, Malpas, September, 1888.

EPINEPHELE HYPERANTHES, VARIETY.—I captured a fine variety of *Epinephele hyperanthes* in North Kent on July 23rd. The right anterior wing is of a pale whitish grey, almost to the base; the costa is especially pale. The cilia are perfect; and the specimen had apparently but recently emerged when it was captured.—J. W. TUTT; September, 1888.

SPHINX CONVULVULI IN SUSSEX.—On September 2nd I took a fine specimen of *Sphinx convolvuli* at rest on a fence at Polegate, Sussex.—A. ABERCROMBY; 41, Fairholme Road, West Kensington, W., September 5, 1888.

SPHINX CONVULVULI IN STAFFORDSHIRE.—A fine male specimen of this moth was captured here on September 1st, 1888, on some linen that had been hung out to dry. It is now in my possession.—E. P. WRIGHT; Granville Terrace, Stone, Staffs.

SPHINX CONVULVULI AT YORK.—I captured here, on August 28th, a fine *Sphinx convolvuli*, which had been attracted by the flowers of the sweet-scented tobacco plant. I took a second specimen in the same place on August 30th, but not in such fine condition.—SAMUEL WALKER; 75, Union Terrace, York.

DEILEPHILA GALII IN CHESHIRE.—In addition to the numerous captures of the perfect insect on the South-east coast, many

specimens have been taken this summer on the Wallasey sand-hills. Hearing that the larvæ were common in that locality in the early part of September, I paid a visit to the sand-hills on the 8th. I found the caterpillars feeding on the lady's-bedstraw (*Galium verum*), where the plant grows thin and short, especially on mounds and rising grounds in the hollows between the sand-hills, and as near as possible to the sea. The larvæ should be sought for in the daytime, and are fond of feeding and exposing themselves in the hottest sunshine. The frass may be looked for among the thin short bedstraw, and followed up to the end of its track, when the caterpillar is seen. I obtained a few in this way, but, as a rule, they are easily seen. On my first visit I took eight, and on September 15th five more,—a satisfactory result, considering that the ground had been well worked,—one collector taking no less than sixty larvæ. On my return home the larvæ were distributed between a large fern-pot and a breeding-cage well filled with sea-sand, and, remembering their fondness for sun, air, and fresh food, I am glad to say that seven have pupated, just below the surface. I ought to say that I came across many dead and dying larvæ of *Deilephila galii* in all stages, probably the result of the late cold and extremely wet weather. My acquaintance with the larvæ of this species began on the sand-hills near South Shields, some twenty years ago. Since that time I have not met with any until the present season, and I am informed it is sixteen years or more since they were last found upon the Wallasey sand-hills.—J. ARKLE; 2, George St., Chester.

DEILEPHILA GALII IN KENT.—On September 13th I found two caterpillars of *Deilephila galii*, and earlier in the year I took a moth of this insect in this neighbourhood.—W. N. BUCKMASTER; West Cliff Road, Ramsgate.

DEILEPHILA GALII IN NORFOLK.—A specimen of the larva of *Deilephila galii* was taken by me on the cliff at Cromer on August 31st. It has fed up and changed into chrysalis.—J. A. TAWELL; Earls Colne, Essex, September 12, 1888.

DEILEPHILA GALII IN SUFFOLK AND ESSEX.—While collecting near Aldeburgh, on the Suffolk coast, during the last week in August, I found the larva of *D. galii* commonly feeding on *Galium verum*. From the traces about they must have been there in great numbers, many having no doubt pupated. I have since taken

about a dozen more on the sand-hills near Shoeburyness.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex.

CHÆROCAMPA NERII AT POPLAR.—A specimen of *Chærocampa nerii* was brought to me alive yesterday. It had been taken on the evening of the 20th, on a railway at Poplar, by a man named Mason.—C. A. BRIGGS; 55, Lincoln's Inn Fields, Sept. 22, 1888.

ABUNDANCE OF SMERINTHUS.—I can fully attest the abundance of *Smerinthus tilia* this year (Entom. 232), having myself taken twenty-eight larvæ, and several specimens of the perfect insect. I have also found twenty-four larvæ of *S. ocellatus*, which is more than I have taken, or heard of anybody else taking, in this neighbourhood in one season. They seem to be very backward this year, several of them have only just undergone their final moult, whereas last year they were full-grown about the middle of August.—W. J. OGDEN; 93, Clapton Common, Upper Clapton, E., September 21, 1888.

CALLIMORPHA HERA IN DEVONSHIRE.—Being at Dawlish, on September 2nd, it occurred to me that it was about the time Mr. Jäger met with so much success in the capture of *Callimorpha hera* in that locality. Having beaten several miles of hedges, I was about to give up all hope of seeing a specimen, when all at once one darted out, alighted upon an oak-tree near, and, upon being disturbed with a stone, flew off over a high hedge and was lost to view. I saw nothing more of the species until the 7th inst., when I took a worn female of the var. *lutescens*. As it came upon me suddenly, flying in the early morning sunshine, it looked so much like *Colias edusa* that I was not aware of my prize until it was in the net.—H. A. AULD; 2, Plassy Road, Catford.

ACRONYCTA ALNI IN LINCOLNSHIRE.—I beat a fine nearly full-fed larva of *Acronycta alni* off birch on Sept. 3rd, while beating for *Notodonta dictæoides*, which I have been successful in finding here.—ELIZABETH CROSS; The Vicarage, Appleby, Brigg, Lincolnshire.

ACRONYCTA ALNI IN NORTHAMPTONSHIRE.—I was fortunate in picking up a nearly full-fed larva of the above species, crawling on the road near Lilford Hall, on the 26th inst.—W. EDWARDS; Lilford Hall, Oundle, August 27, 1888.

SYNIA MUSCULOSA IN LANCASHIRE.—I have to record the capture of a specimen of *Synia musculosa* here at light on the 24th

of August. It is just like an ordinary specimen with the exception of the left anterior wing, which has a distinct small circular black spot. Is not this an unusual aberration? This is, I think, the first time this species has been recorded from this district, which is about $2\frac{1}{2}$ miles from Manchester.—A. STEWARD; Oaklands, Eccles, Lancashire, August 30, 1888.

HELIOTHIS PELTIGERA IN WALES.—While staying at Gower, South Wales, this August, I captured two fine specimens of *Heliothis peltigera*. The rest-harrow, the food-plant of the larva, grows there plentifully. I also took a specimen of *Leucania littoralis*, besides many common moths.—A. N. CHAMBERLAIN; Highbury, Moor Green, Birmingham, September 7, 1888.

PLATYPTILIA GONODACTYLA, THE SECOND BROOD.—I am pleased to record the breeding of the second brood of *P. gonodactyla*, from ova obtained by enclosing specimens of the June brood on a growing plant of *Tussilago farfara*. The larva in its early stages mines the fluffy under sides of the leaves of its food-plant, but afterwards feeds exposed, and finally spins a slight web, generally on the under surface of the leaves, in which it changes to a pupa.—J. W. TUTT; Westcombe Park, S.E.

[*P. farfarella*, Zell., is probably referable to the second brood of *P. gonodactyla*; see Entom. xviii. 172, where also it is mentioned that Mr. Gregson has recorded (Entom. vi. 427) the history of “a *gonodactylus*-like insect, from a larva found feeding in a kind of gallery made in, or under, the woolly under side of a coltsfoot-leaf.”—R. S.]

RARE LEPIDOPTERA AT DEAL.—I am pleased to record the capture of *Schnœnobius mucronellus* at Deal,—two specimens on June 30th, and two very fine ones on August 10th. I also took *Doryphorella palustrella* during the first week of August, but this species is exceedingly rare, four good specimens only falling to my net, although I carefully searched for it. *Lita blandulella* occurred very sparingly, but *L. semidecandriella* was fairly abundant. A nice series of *Melissoblastes bipunctatus (anellus)* was a welcome addition to my cabinet. I never saw *Lithosia pygmaeola* so large nor dark as they were this year. *Crambus contaminellus* was only just appearing when I left on August 19th. *Acidalia ochrata* was very rare this year, and exceedingly late, as have been all species since the commencement of June.—J. W. TUTT; Westcombe Park, S.E., September, 1888.

EXPERIMENTS ON HEREDITY IN *SELENIA TETRALUNARIA*.—For the purpose of pursuing to the best advantage some experiments I am making with *Selenia tetralunaria* (*illustraria*), I should be greatly obliged by receiving, and should be happy to pay for—or exchange—living specimens of it, captured in widely different places, especially in Scotland, Wales, Northern England, or any part of continental Europe. My object is to breed from them, and I do not require large numbers; for example, a dozen or a score of eggs from a brood, or the same number of larvæ or pupæ, would be generally sufficient, as of course would a single fertile female moth.—F. MERRIFIELD; 24, Vernon Terrace, Brighton, September 12, 1888.

[The interesting experiments which Mr. Merrifield is conducting, with a view to examining the results of heredity, should receive the best support, and we trust our readers will have opportunity of furnishing the material required.—J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*September 5th*, 1888. Dr. D. Sharp, F.L.S., President, in the chair. Mr. M. Stanger Higgs, of St. Leonard's, Gloucester, was elected a Fellow of the Society. Dr. Sharp mentioned that he had received, through Prof. Newton, a collection of Coleoptera from St. Kilda, consisting of *Carabus catenulatus* (1), *Nebria brevicollis* (12), *N. gyllenhalii* (3), *Calathus cisteloides* (20), *Pristonychus terricola* (1), *Pterostichus nigrita* (71), *P. niger* (31), *Amara aulica* (4), *Ocypus olens* (1). The species being nearly all large Geodephaga, he thought probably that many other Coleoptera inhabited the island. He remarked that these specimens showed no signs of depauperation, but were scarcely distinguishable from ordinary English specimens. Mr. South exhibited a melanic *Aplecta nebulosa* from Rotherham, bred with five others of ordinary form, and an albino of the same species from Devonshire; a very curious dark variety of *Plusia gamma*; two dark vars. of *Eubolia limitata* from Durham; *Dicrorhampha consortana* from North Devon. Mr. Champion exhibited *Harpalus cupreus*, *Leptusa testacea*, and *Cathormiocerus maritimus* from Sandown, Isle of Wight. Mr. Elisha exhibited interesting Micro-Lepidoptera. Mr.

Jacoby exhibited three boxes of Coleoptera, collected partly by Mr. Fruhstroffer, containing some rare *Cetoniadæ*, *Paussidæ*, &c. Mr. E. Saunders exhibited *Amblytylus delicatus*, Perr., a new British bug, taken at Woking. Mr. Jacoby mentioned that he had taken the larva of *Vanessa cardui* on a narrow white-leaved plant in his garden. Mr. Enock mentioned that out of a batch of two males and six females of the Hessian Fly kept together, all six females had laid fertile eggs, so that each male must have impregnated more than one female.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 23rd, 1888. T. R. Billups, F.E.S., President, in the chair. Mr. H. A. Cruttwell, of Asuba, River Niger, West Coast of Africa, was elected a member. Mr. J. T. Williams exhibited nine specimens of *Deilephila galii*, taken by him at St. Margaret's Bay, and mentioned that Mr. Felix Oswald had taken eight specimens in the same district. Mr. Wellman, bred examples of *Heliaca tenebrata*, *Eupithecia togata*, *Emmelesia unifasciata*, *Rodophæa formosa*, *R. suavella*, *R. avenella*, *Sesia ichneumoniformis*, among which were three specimens having yellow bands; and he stated that he had bred only these three from five dozen pupæ, while last year out of three dozen he bred sixteen of this variety; and he also showed partially melanic specimens of *Venusia cambrica* from Sheffield. Mr. South, many species and varieties of Lepidoptera, among which was a variety of *Arctia villica* and an example of a *Plusia*, and called attention to the curiously-serrated line on the hind margin of the primaries, which formed a distinct metallic W; he said the specimen, so far as he knew, did not agree with any species hitherto described, but it might possibly be a variety of *Plusia gamma*. Mr. Joy, *Coremia designata*. Mr. Helps, *Acontia luctuosa*. Mr. T. D. A. Cockerell, *Trichodes ornatus*, *Chrysis pacifica*, and *Cantharis nuttalli* from Colorado; and notes were read relative to his exhibit. The Secretary read the following communications from Mr. Cockerell: a note on the genus *Euchloë*, and a short paper entitled "Can Insects distinguish between Red and Yellow?" in which he asked the members to assist him with information as to whether yellow insects showed a fondness or otherwise for pink flowers, and whether the insects seemed aware of the difference between red and yellow.

Sept. 13th.—J. T. Carrington, F.L.S., Vice-President, in the chair. Mr. J. H. Keys, of Plymouth, was elected a member. Mr. H. A. Auld exhibited a large number of *Dicycla oo*, taken at sugar on the 10th of August last near Hayes. Mr. Bouttell, a fine variety of *Melanippe sociata*, and also many other species. Mr. Turner, a melanic specimen of *Boarmia gemmaria* v. *perfumaria*, taken near Ashdown Forest. Mr. Stringer, species of Lepidoptera from Shenley, Herts, and remarked on the unusual abundance of *Ino statices* and *Zygæna filipendulæ*. Mr. Croker, imagines and preserved larvæ of *Smerinthus populi* and *Panolis piniperda*. Mr. Elisha, fine bred series of the following Tortrices: *Argyrolepis æneana*, *A. zephyrana*, *Eupæcilia atricapitana*, *E. amandana*, *Retinia turionana*, *Catoptria juliana*, *Phoxopteryx derasana*, *Ephippiphora trigeminana*, and *Carpocapsa pomonella*, the last-named bred from berries of the white beam-tree; also the following Tineæ: *Nematois fasciellus*, *Cerostoma horridella*, *C. alpella*, *Æcophora unitella*, *Coleophora therinella*, and *Gelechia semicandrella*, the last-named bred from *Cerastium tetandrum*. Mr. Wellman, bred examples of *Noctua sobrina*, *Plusia interrogationis*, both from Perthshire; *Dianthæcia irregularis*, from Cambs.; and many other species. Mr. South, a short series of *Lycæna icarus* from Durham, which he said might be regarded as a fair sample of *L. icarus* occurring at Bishop Auckland and Castle Eden, one specimen, a male, having distinct black patches in the fringes. Several of the females were remarkable for having all the under-surface markings of the primaries reproduced on the upper surface. He also showed fourteen specimens of the male of *L. icarus*, having traces of black dots or spots on the hind margins of the secondaries, picked from between sixty or seventy examples. Mr. South remarked that he was aware this form of *L. icarus* occurred in Scotland and Ireland; he had taken an example at Ventnor, but did not know that it occurred in other parts of England, and would be glad of information as to this. Mr. Tutt said it occurred at Deal. Mr. Tutt mentioned that the larvæ of *Deilephila galii* had been occurring very freely at Deal, and some remarks were made by other members with reference thereto. An interesting discussion took place on the probable influence of humidity in causing variation among Lepidoptera.—H. W. BARKER, Hon. Sec.

REVIEWS.

Insect Life: devoted to the Economy and Life-Habits of Insects, especially in their Relations to Agriculture. Edited by the Entomologist and his Assistants, with the sanction of the Commissioner of Agriculture, M.S. Department of Agriculture, Division of Entomology. Vol. I. No. 1. Washington: Government Printing Office, 1888.

THIS magazine is called, in addition to the title as above specified, 'Periodical Bulletin,' and as there is no indication of price, or that it is sold by any agents, we presume it is distributed freely among suitable readers in the United States of America. Happy people! who possess a state entomologist like Mr. C. V. Riley to conduct such a magazine, and a government sufficiently enlightened to support him in his active endeavours to circulate knowledge of Economic Entomology among the people.

Thirty-two pages large 8vo, well printed, with liberal illustrations, No. 1 of 'Insect Life' promises well for the future. There are six special articles on certain destructive insects, generally with woodcuts, "Extracts from Correspondence" of the Department, with replies, and lastly "Notes," which are of general interest. We congratulate Mr. Riley and the Department upon the issue of 'Insect Life.'—J. T. C.

Entomology for Beginners. By A. S. PACKARD, M.D., Ph.D. New York: Henry Holt & Co., 1888. 354 pp. 8vo, 373 woodcuts.

DR. PACKARD has produced a most useful and handy little work, concisely arranged, liberally illustrated and well printed. He divides his subjects into eight chapters, the first three respectively upon Structure, Growth and Metamorphosis and Classification of Insects; also others on Insect Architecture, Injurious and Beneficial, Directions for Collecting, Preserving and Rearing (it may be remarked that in the directions for setting Lepidoptera, only the high-flat system is given), Mode of Dissecting and Mounting for Microscopical Examination; and the Entomologist's Library, wherein reference is made to about 250 books, standard works, and periodicals; and lastly, 17 pp. of glossary of terms used in the study of Entomology. We can highly recommend this work to our readers, who will doubtless, on enquiry, find in England some agent for the publishers.—J. T. C.

OBITUARY.

PHILIP HENRY GOSSE, F.R.S., was born at Worcester in 1810, and died at his residence at St. Mary Church, Torquay, on the 23rd August, 1888. Mr. Gosse belonged to that class of naturalists which it is, in the present day, somewhat the fashion to look down upon, but they were the very men who created an interest in Natural History amongst the people, and widely extended the habit of observation; thus not only paving the way for grants of public money for "original research," but actually bringing into existence the specialists of the present day. Early in life Mr. Gosse removed to Poole, on the Dorset coast, where he first developed the taste for Natural History pursuits, which in after life became so valuable. His work, as is well known, was that of the recording of facts popularly stated, such records existing in his numerous books and still more numerous scattered papers; the Royal Society's catalogue of scientific papers mentions up to 1873 no less than sixty of such, while many others have since then appeared. As a traveller, Mr. Gosse had some reputation, having, in 1827, in pursuit of commercial occupations, visited, among other places, and studied the Natural History of Canada, where he resided for several years. He afterwards visited the United States, staying in Alabama for about a year. In 1844 Mr. Gosse was in Jamaica, where he lived for eighteen months, afterwards returning to England. Ill-health caused his removal at a latter period from London to the sea-side, Tenby being one of his favourite hunting-grounds. Later he removed to the house where he died, and where for long past naturalists visiting Torquay have been made welcome. In 1856 Mr. Gosse was elected a Fellow of the Royal Society. Among his best-known works are 'The Canadian Naturalist'; 'A Naturalist's Sojourn in Jamaica' and 'Birds of Jamaica'; 'Naturalist's Ramble on the Devonshire Coast'; 'The Aquarium,' of which study both in private and public institutions he was practically the founder; 'A Manual of Marine Zoology'; 'Tenby, a Seaside Holiday'; 'History of British Sea Anemones and Corals'; 'A Year at the Shore'; and others. Mr. Gosse was very fond of the study of Entomology. Papers on this subject appear from his pen in the early volumes of the 'Entomologist' and 'Zoologist.' Even so recently as in 1879 and 1880, vols. xii. and xiii. of this magazine contain important illustrated papers by him. Of late years Mr. Gosse was much engaged in religious teaching, having erected at his own expense a public place of worship, in which he was to be found both as worshipper and preacher. He, however, always found time to add to his literary Natural History works, and these have built a monument to his ardent and unceasing study of the beauties of nature.—J. T. C.

THE ENTOMOLOGIST.

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NOVEMBER, 1888.

[No. 306.]

AN ENTOMOLOGICAL EXHIBITION.

An exhibition of Entomological subjects, probably the largest held in London since the memorable one at Westminster, took place on the 17th and 18th October, at the Bridge House, London Bridge, being that of the South London Entomological and Natural History Society. Although Entomology is the leading feature of these annual exhibitions, other branches of Zoology are prominently represented, as well as botanical subjects and microscopy.

Among the novelties exhibited were Mr. Jenner's specimens of *Acidalia immorata*, taken for a second time near Lewes in Sussex; they are remarkable not only for their fine condition, but also for the wide range of variation. Mr. R. Adkin, Sphinges and Bombyces, especially *Spilosoma mendica*, including var. *rustica*, bred from Irish parents; *Triphæna comes* from pale brown to almost black; and other rare Lepidoptera from Shetland and elsewhere. Mr. Edward Atmore, of Lynn, Macro- and Micro-Lepidoptera, among which *Tortrix lauriana* varied much; there were also *T. decratana* bred from larvæ feeding on *Myrica gale*, and Norfolk insects. Mr. Jäger, series of *Callimorpha hera* from South Devon, and other species from South Wales. Mr. Howard Vaughan, drawer of British *Colias*, including hermaphrodite, part *edusa* and part var. *helice*; drawer of *Dianthecia* from many localities. Mr. C. A. Briggs, *Chærocampa nerii*, taken this year at Poplar; three drawers of Nocturni, with fine series of *Deiopeia pulchella*, vars. of *Arctia caia*, &c. Mr. A. B. Farn, the

genus *Triphæna*, showing varieties from Isle of Lewis and other places. Mr. J. E. Robson, of Hartlepool, varieties of Zygaenidæ. Mr. Tugwell, six drawers selected from his collection—Sphingidæ, all British Zygaenidæ, Nocturni, with the unique British *Syntomis phegea*, and other rarities. Mr. South, Pieridæ and Argynnidæ from various parts of these isles; very extensive series of *Boarmia repandata* from North Devon, with great variation, including vars. *conservaria* and *destrigaria*; series of *Cidaria truncata* and *C. immanata* from many localities. Mr. J. H. Leech, six drawers, glazed top and bottom, so that the insects could be examined without removal: the drawers consisted—one of *Acherontia atropos*, from various parts of Europe, with many aberrations; one of *Lasiocampa pini*, showing great variation; one of *Pieris brassicæ*, from Europe, North Asia, Japan, &c., including forms *cheiranthi* and *woollastoni*; one of *Gonepteryx rhamni*, with forms *cleopatra*, *cleobule*, *farinosa* and *maderiensis*; one of *Colias hyale* from various localities; another of *C. eogene*, from Cashmere. This gentleman also sent six cases of Palæarctic Coleoptera, containing some unique examples. Mr. J. H. Cooper, six drawers of British Lepidoptera, many fine specimens. Mr. D. Chiltenden, of Ashford, fine varieties of *Xanthia aurago*. Mr. Sydney Webb, of Dover, remarkable varieties of Iycenidæ taken this year. Mr. Wellman, six drawers of very fine Lepidoptera, mostly bred. Mr. G. Elisha, six drawers of Geometridæ, containing fine and rare species and varieties. Mr. W. White, preserved larvæ and South African insects. Mr. J. Smith, of Plumstead, nine cases of Rhopalocera. Mr. A. H. Jones, of Eltham, two drawers containing all the known European Erebiæ. Mr. Oliver E. Janson, beautiful series of exotic Rhopalocera, Ornithoptera, and Papilio. Mr. Gregson, of Liverpool, coloured drawings of Lepidoptera and Hymenoptera in his collection. Mr. S. Mosley, of Huddersfield, drawers of varieties of *Abraxas grossulariata*, *Arctia caia*, &c. Mr. Tutt, long series of varieties of Agrotidæ, Gelechiidæ, &c. Mr. Percy Russ, of Sligo, long series of varieties of Lepidoptera taken in North-west of Ireland. Mr. Arthur Marshall, of Weybridge, comparative series of same species from Rannoch, Isle of Lewis, and South English localities. Mr. Samuel Stevens, many rare Lepidoptera of his own taking. Mr. J. Jenner Weir had a fine exhibit; as also Mr. Edwards, exotic Rhopalocera.

Among exhibitors in other orders were Mr. McLachlan, British Caddis-flies; Mr. Billups, many drawers of Coleoptera, Hymenoptera, and other groups. Mr. Verrall, of Newmarket, very beautifully prepared Diptera, in three drawers, the Tipulidæ being most remarkable. Mr. Brunetti also exhibited in the same order. Mr. West, of Greenwich, fine exhibit of Coleoptera, &c. Messrs. Cooke & Son, of Museum Street, London, a large show of entomological apparatus, cabinets, &c.

It is impossible with the space at our disposal to enumerate all the exhibitors and exhibits, but they included many besides those mentioned.

Lectures were given at intervals, illustrated by the oxy-hydrogen light. The attendance was very large on each evening, upwards of 2000 visitors being present.

NOTES FROM NEW ZEALAND.

BY G. V. HUDSON, F.E.S.

LEPIDOPTERA have been decidedly scarce in New Zealand during the past season, owing to the numerous and protracted gales of wind that have prevailed almost throughout the summer.

Early in February I visited the Mount Arthur Tableland, which is often said to be one of the best localities for alpine collecting in New Zealand. It consists of open country, alternating with patches of stunted birch forest, and varies in altitude from about 3600 ft. to 4500 ft. The scenery is in most places very magnificent, and the place offers almost unlimited scope for both tourist and naturalist. The plants are extremely numerous, and are nearly all specifically distinct from those found on the sea-level; a peculiar and equally novel insect-fauna being naturally the result.

Our best capture was a splendid specimen of *Dodonidia helmsii*, which was taken by my friend Mr. C. W. Palmer, at six o'clock on the evening of February 16th. Unfortunately we did not see any more during the five days we remained on the Tableland, so that it would appear to be somewhat rare. My single specimen was taken exactly three years before on the Dun Mountain, Nelson, also late in the afternoon. The commonest butterfly on the Tableland was *Argyrophenga antipodum*, which

abounded amongst the tussock-grass in all the openings. It is noteworthy that this insect becomes alpine in the north of the middle island, *viz.*, in the Nelson district, whereas on the plains of Canterbury and Otago it occurs at the sea-level.

The nights, when clear, were intensely cold, the thermometer standing at 29° Fahr. one morning at 5 a.m. Notwithstanding this cold, Noctuæ flew into our hut during the evenings, attracted by the light. They consisted of *Mamestra rubescens*, *M. moderata*, and *Agrotis nullifera*. In the daytime *Larentia clarata* was the commonest moth, the conspicuous and handsome *Crambus crenæus* coming next in abundance, two specimens of the rarer *Crambus diplorrhous* being also met with. Both these insects are quite two inches across the wings, and consequently unusually large in size for the genus. One plume-moth was obtained, *viz.*, *Mimæseoptilus lithoxestus*. But the most interesting of all the alpine Lepidoptera were the members of the genus *Notoreas* and its allies, of which we took six species, *viz.*, *Notoreas brephos*, *N. philadelphia*, *N. perornata*, *Arcteuthes chrysopeda*, *Slathomyma anceps*, and *Dasyuris partheniata*, besides several others undetermined.

The greatest elevation reached was Mount Peel (5300 ft.), where we saw one specimen of *Erebia pluto*, but could discover no more, although we spent upwards of three hours on the shingle-beds near the top of the mountain. It was most disappointing to miss this species, as it was an insect we were both much in want of. This mountain also produced a fine species of alpine grasshopper (Locustidæ), which I have not yet identified, as well as large quantities of the weevil (*Cladopais mirus*) found clinging to the grass, and very sluggish with the cold.

I was informed by the miners who reside on the Tableland that the summer was an exceptionally cold one, snow having fallen there only three weeks before our arrival. This, I think, will account for the scarcity of *Erebia pluto* and other insects, which should have been much more abundant. We left the Tableland on the 19th, and on the 20th the whole of the mountains down to 3000 ft. were again covered with snow.

On March 7th I observed the largest assemblage of moths I have ever seen in New Zealand. They were flying round an electric light suspended from the yard-arm of the steamship 'Aorangi,' laying at the wharf in Wellington Harbour. I should

say, at a moderate computation, that there were over 300 specimens. I could not capture any, owing to the great height of the light, but they appeared to be chiefly *Mamestra composita* and *Porina signata*. I think that this is a good instance of the efficiency of the electric light in attracting insects, as I have found that an ordinary lamp will not attract more than a dozen or twenty specimens even under the most favourable circumstances.

Wellington, New Zealand, August 5, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

By J. W. TUTT, F.E.S.

(Continued from p. 254.)

APAMIDÆ, Gn.

THIS extensive family contains some of our most variable and some of our most constant species of Noctuæ. It seems almost impossible to make any general remarks as to the tendency of variation in the family as a whole, as the different genera vary more or less in different directions. The variation in ground colour is in some instances very remarkable, whilst the markings vary exceedingly in many species. Such species as *didyma*, *bicoloria*, *strigilis*, may well be termed polymorphic. The colours of a very large number of species vary from a pale grey or yellowish ground colour, through various shades of brown or red to black. There is probably no family in which more pronounced cases of melanism occur, or where it is more general, e. g. *micacea*, *rurea*, *monoglypha*, *testacea*, *leucostigma*, *didyma*, *strigilis*, *exuliz*, *basilinea* and *abjecta* are well-known examples, and all show a great and general tendency to the production of melanic forms. Even such constant species as *scolopacina* and *sublustris* occasionally show a tendency in this direction, the former being darker in Yorkshire than in the London district, the latter sometimes occurring very much suffused at Deal.

Gortyna, O., *ochracea*, Hb.

Hübner's *ochracea* ('Beiträge zur geschichte der Schmet.,' pl. 2. m.) is referred by Guenée to this species, and considered by

Dr. Staudinger as the type; but in his 'Sammlung Europaischer Schmet.,' Hübner twice figures (186, 187) this species under the name of *flavago*, a name previously given by Fabricius to a *Xanthia*. Hübner's fig. 186 has "the ground colour of the anterior wings pale yellow, with two pale, double, basal lines, the space between filled in with blackish grey; the stigmata pale, a reddish brown shade passing between them, and extending from the costa to the inner margin; a double line, outside the reniform, is followed by a narrow blackish grey band, the outer margin being greyish. Hind wings pure white, without markings." Hübner's fig. 187 has the "anterior wings of an orange-yellow ground colour, with dark red-brown transverse markings. The hind wings grey, with a broad, dark, marginal shade, followed by a dark transverse line and a dark lunule." Hübner's fig. 186 (with white hind wings) is very unusual, and Guenée seems to have had doubt whether it represented a variety of *ochracea* or was distinct, for he writes, "Hübner figures a *flavago* with entirely white inferior wings," and then asks, "Is this a variety?" ('Noctuelles,' vol. v., p. 123). But besides this, there are two other distinct, and probably, if carefully noted, equally common forms; the first is of a pale ochreous yellow, with comparatively pale transverse markings (the type); the second is of a deep golden yellow, with bright purplish-brown or reddish-brown markings. Sepp figures this pale form (I. pl. 3), and Guenée says of it ('Noctuelles,' vol. v., p. 123):—"Sepp's figure (No. 7) is a work of art. It is represented with folded wings, but the colour is too pale." It would seem, therefore, that Guenée was unaware that there was a paler form. Mr. G. T. Porritt, in his 'List of Yorkshire Lepidoptera,' published in the 'Transactions of the Yorkshire Naturalists' Union,' Part vi., p. 72, writes:—"Mr. N. F. Dobrée writes of this species: 'In all the specimens I have seen from the E. Riding, the size is not more than two-thirds of southern specimens, and the colouring is yellow instead of orange. The difference is so marked that I am surprised that it has not hitherto been noticed in print.'" Mr. Dobrée also writes me:—"All the *flavago* which I take here in October (when I look for *lutosa*) are much smaller than the handsome orange specimens, and of a yellow colour which may almost be called a lemon-yellow. Under wings similarly much paler. These I get accidentally at flight or at sugar, the orange always by

breeding, considerably earlier. I hold it to be a distinct var., but have not sought general information, and am open to correction" (*in litt.*). With regard to this I may add that I have bred a considerable number of the orange form, var. *flavoauratum*, but do not remember breeding pale ones, although I have captured them late in September. Thus I have both forms from this neighbourhood (Greenwich), and my Hull specimens are of both forms. Taking therefore the pale form as the type, I shall call the darker form :—

Var. *flavoauratum*, mihi.—Superior wings of a bright golden yellow colour, with the two ordinary transverse bands dark purplish brown, the nervures of a bright reddish colour. Inferior wings of a pale yellowish grey colour, with a blackish lunule and a blackish band parallel to the hind margin. This is described under the name of *flavago* by Guenée, 'Noctuelles,' vol. v., p. 122; by Newman, 'British Moths,' p. 279; by Stainton, 'Manual,' vol. i., p. 197; by Humphrey & Westwood, 'British Moths,' vol. i., p. 213; and by Haworth, under the name of *ochraceago*, 'Lepidoptera Britannica,' p. 234. In fact Hübner and Sepp seem to be the only authors who figure and describe the pale type.

Hydræcia, Gn., *petasitis*, Doubleday.

Guenée, in his 'Noctuelles,' vol. v., pp. 127, 128, treats this as a variety of *H. vindelicia* of Freyer and Herrich-Schäffer, but this latter is sunk as a synonym by all modern authors. A full description of the type is given by Newman in his 'British Moths,' p. 281; and on p. 282 of the same work, Newman points out that, if *vindelicia* is a less obscure form, as mentioned by Guenée, *petasitis* is the prior name to *vindelicia*, and the former therefore would become the type and the latter be retained simply as a varietal name. Comparing *petasitis* with *vindelicia*, Guenée writes, "Much smaller, the markings of the superior wings very confused, and all the wings are more shining and more thickly scaled" ('Noctuelles,' vol. v., p. 128). Our specimens of *petasitis* present a slight sexual variation, the females being larger and darker than the males.

α. var. *vindelicia*, Frey.—Guenée's description of *vindelicia* ('Noctuelles,' vol. v., p. 127) is as follows :—"Superior wings greyish brown with a slight violet tinge, and all the exterior part of the median space, the outer margin, and a streak from the

apex of a deeper brown. Nervures sprinkled with whitish. The two stigmata large, and of the same hue as the ground colour. Inferior wings of a clearer grey, with a darker lunule, median line and subterminal shade." This is therefore only a larger, brighter form than ours. Mr. Dobrée writes:—"Guenée separated *petasitis* from England and *vindelicia* from Bavaria, because in those early days it was not understood that British insects are generally smaller, less distinctly marked, and less brilliantly coloured than Continental specimens, especially as you approach Southern Europe" (*in litt.*).

β. var. *amurensis*, Stdgr.—Dr. Staudinger, in his last trade list (1887), included a variety of this species, from the Amur district, under the name of *amurensis*. Of this variety I know nothing, but Mr. Dobrée has kindly given me the following information, "I have v. *amurensis*, and if the three or four I have illustrate them all, the markings are possibly a little more distinct than ours, and the violet gloss very decidedly more noticeable, but otherwise they do not differ from our specimens" (*in litt.*).

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN DEVONSHIRE.—On September 6th I took a specimen of *Colias edusa* at Haldon in Devonshire, and saw another on the wing. Having seen this species on the 8th, 9th, and 10th of September, flying in different parts of that district, I thought it might be the beginning of an "*edusa* year." However, a visit to the clover-fields in the neighbourhood of Dartford, Kent, on the 11th, dispelled that opinion, for there was not the sign of either *Colias edusa* or *C. hyale*. A day's work at Riddlesdown on the 12th, and at Otford on the 13th, also resulted in no *edusa*.—H. A. AULD.

COLIAS EDUSA, var. *HELICE*, AT CHICHESTER.—I captured a fine specimen of the variety *helice* of *Colias edusa*, in a clover-field in the neighbourhood of this city, on September 13th. It is a primrose-coloured insect. The type has occurred sparingly with us this season.—JOSEPH ANDERSON, jun.

COLIAS EDUSA IN DORSETSHIRE. — I spent a long day on Saturday at Lulworth, and found *Colias edusa* flying freely about the Cove, and also along the rocks near. I also met with it plentifully further inland. The commonest butterfly was *Satyrus semele*, which abounded on the hill-sides. *Vanessa io*, *V. atalanta*, and *V. cardui* were also plentiful. — V. R. PERKINS; Weymouth, September 24, 1888.

EPINEPHELE HYPERANTHES, VARIETY. — I have taken five specimens of a variety of *Epinephele hyperanthes* this summer, in Berkshire. The yellow and black rings are entirely absent, and only the white central dots are evident. — JOHN E. WINKWORTH; 22, Wallwood Street, Burdett Road, E., September 24, 1888.

VANESSA ANTIOPA IN KENT. — I took a fine specimen of *Vanessa antiopa* on the high-road near Sevenoaks, on the morning of Saturday last, September 22nd. The colours were brilliant; the border is not quite so white as that of one which I caught in September some forty years ago, a notice of which appeared at the time in 'The Zoologist,' but is much lighter than the buff of continental specimens. — J. T. ROGERS; River Hill, Sevenoaks, September 23, 1888.

SMERINTHUS TILÆ, VARIETY. — I bred a nice dark red-brown variety of this in June. At about the same time I caught about a dozen males assembling round a captive female. — H. M. LEE; Gladstone House, Sutton, Surrey, September 25, 1888.

SPHINX CONVULVULI IN HANTS. — A female specimen of this insect, in very fair condition, which was so plentiful here last year at white tobacco plant, was brought to me on September 12th, by a gardener, who captured it in his cottage. — G. HESELTINE; Walhampton, Lymington, Hants, October 1, 1888.

DEILEPHILA GALII. — In addition to the records of *Deilephila galii* which have appeared in recent numbers of the 'Entomologist,' we have received the following:—

Kent. — Whilst walking in a meadow by the River Medway, on September 8th, I had the good fortune to find a larva. It has never to my knowledge been found in Maidstone before. It was nearly full-fed; and after feeding on lady's-bedstraw till September 17th, spun the leaves of its food-plant together just under the surface of the ground and turned into a chrysalis. — FRANCIS FOSTER; Westfield, Maidstone, September 23, 1888.

Cambridge.—The larvæ have been found plentifully in this district during September.—G. E. CRALLAN; Cambridgeshire Asylum, Fulbourn, near Cambridge, October 5, 1888.

Middlesex.—I am pleased to state that I am one of the fortunate finders this year of the larvæ of that beautiful insect *D. galii*, not only on the coast, but quite near London. Knowing a spot at Edmonton where *Galium verum* grows abundantly, I sent my son to search, and he succeeded in finding the larvæ, so I went myself and found many traces of them, and field mice also, which I think had taken most of the larvæ, as there were very few left for me. Has it occurred to other naturalists that each of the last three times this insect has been common in this country, so has the Pallas's sand-grouse? This seems a suggestive coincidence. Is it the same cause that brings such distinguished visitors to our shores? It would be interesting to know the dates when both bird and insect were first seen during the past season. Had the summer been a warm one, I should have been inclined to think the latter were the offspring of some who had paid us a visit last year; but as I know from experience they require rather a high temperature to develop, I think they must have come over this season. In the year 1859 I found a few larvæ of *D. galii*, and got them into pupa. The next season was a very cold one. After waiting and watching until the middle of August, I had to bring the pupæ indoors and give them artificial heat. I shall do so again if they do not emerge before the end of June next.—H. JOBSON; 22, Fraser Road, Walthamstow, E.

SPHINGIDÆ IN SUSSEX.—On September 17th a very fine specimen of *Acherontia atropos* was brought to me, and another on the 19th; both were in beautiful condition. I have heard of several others being taken here. Last year the larva of one was brought to me, but after changing to the pupa state it was unfortunately crushed. I have also had a fine specimen of *Sphinx convolvuli* brought to me this year.—THOMAS HOWE; 3, Royal Terrace, Devonshire Road, Bexhill-on-Sea, Sussex, September 30, 1888.

CALLIMORPHA HERA IN SOUTH DEVON.—It may be of interest to your readers to hear that I captured three specimens of *Callimorpha hera* near Dawlish, South Devon, towards the end of August last.—ALVAH J. COOK; 9, Elgin Avenue, London, W., October 8, 1888.

FOOD FOR *BOMBYX RUBI*.—The absence of proper food-plants is sometimes a difficulty with London lepidopterists. I have just been rearing *Bombyx rubi* larvæ on knotgrass (*Polygonum aviculare*), to which they take readily. Perhaps this fact will be useful to some of our London friends.—J. W. TUTT.

NOTODONTA BICOLOR.—It may be as well to put on record all the specimens that have been taken in England, and who are the possessors, as I have seen other series of this insect years ago in collections as British. As near as I can ascertain, seven were taken at Burnt Wood, Staffordshire; one by a Mr. John Smith, of Manchester; Miss Carter, of Manchester, got one, and Mr. Evans, of Derby, has it. Six were taken by Mr. Charlton; one female laid eggs, from which seven moths were bred, and they were distributed as follows:—Sidebotham 2, Doubleday 1, Mr. Burney 1, H. O. Hammond 1, C. G. Barrett 1, J. B. Hodgkinson 2, from J. Chappell; Harwood 4 also, from C. Campbell, of which two went to Mr. Burney, two to Curzon; Dr. Mason has 1 King got from Charlton; and Mr. Evans has 1 Carter got from Smith, making 14 in all.—J. B. HODGKINSON; Ashton-on-Ribble.

DICRANURA BICUSPIS, *Borkh.*—A short time ago Capt. Vipar called my attention to the discrepancies between the existing figures and descriptions of the larva of this insect. I was thus led to investigate the subject; but it proves to be involved in so much confusion, that further information from those able to supply it, would be very desirable. Setting aside the description and figure of Borkhausen and Hübner, which are considered to be entirely erroneous, we find that Ochsenheimer and Freyer describe a birch-feeding larva with two conspicuous black spots on the back of the head, and with the dorsal stripe distinctly interrupted in the third segment. On the other hand, Boisduval, Rambur, Graslin and Duponchel say nothing about the spots on the back of the head, represent the dorsal streak as continuous, and state that the larva feeds in preference on beech. It is obvious that they cannot be speaking of the same larva. According to Koch and Speyer (*teste* Kaltenbach), the larva of *Dicranura furcula* (a species confounded with *D. bicuspis* by some of the earlier authors) feeds on beech and copper beech, although it is well known that sallow is its ordinary food; Ochsenheimer's statement that *D. furcula* feeds also on poplar

seems to be unconfirmed, and perhaps arises from some confusion with *D. bifida*. *D. furcula* is the only species of the genus which is recorded by Kaltenbach to feed on beech, and I suspect that the reputed beech-feeding *D. bicuspis* is nothing else. Our English *D. bicuspis*, which feeds on birch at Tilgate, feeds chiefly, if not exclusively, on alder in the North of England, as well as in Derbyshire and Glamorganshire. Kaltenbach mentions that Rössler found it on alder. Only one figure of a birch-feeding *D. bicuspis* is to be found in Buckler's work, and he does not mention the black spots on the back of the head. Pending further information, I can only suggest that our present knowledge seems to indicate that *D. bicuspis* feeds exclusively on birch and alder, and that the species of the genus *Dicranura* either confine themselves to different food-plants in different localities, or else that there is a larger number of closely-allied species, feeding on different plants, than we are at present inclined to suppose. — W. F. KIRBY, Assistant in Zoological Department, British Museum, South Kensington.

LAPHYGMA EXIGUA AT CHICHESTER.—In a large clover-field, my brother, Frederick Anderson, had the good fortune to take a beautifully fresh specimen of *Laphygma exigua* on Sept. 14th. He kicked it up whilst walking through the clover, and netted it at the first stroke.—JOSEPH ANDERSON, jun.

LAPHYGMA EXIGUA IN DEVON.—I have to record the capture of *Laphygma exigua*, at sugar, on August 13th, while collecting with Mr. Harold White, near Bideford, N. Devon. — HUBERT BRAY; 41, Great Russell Street, Bloomsbury, October 2, 1888.

AGROTIS PUTA IN HANTS.—I took a specimen of this insect, at light, on September 5th.—G. HESELTINE; Walhampton, Lymington, Hants, October 1, 1888.

CIRRHOEDIA XERAMPELINA AT ACTON.—On the 12th inst. I took a specimen of this moth off a gas-lamp at East Acton. — H. G. PLACE; 11, Norland Square, Holland Park, W., Sept. 20.

CIRRHOEDIA XERAMPELINA IN DORSET.—A specimen of this insect, in poor condition, was taken flying at dusk at Bloxworth, close to Bere Wood, on September 18th, 1888. This is the second record of its appearance in this county.—A. W. P. CAMBRIDGE; Bloxworth Rectory, September 19, 1888.

HABITS OF *CALOCAMPA SOLIDAGINIS*.—Having lately met with some success in taking this insect, I beg to forward a few notes on it for the information of your readers, as the account in Newman's 'British Moths' is very meagre and unsatisfactory. I have taken a few specimens each year for some years past, in one of the numerous valleys on Cannock Chase, where it was found about seven or eight years ago by my friend Mr. E. W. K. Blagg, of Cheadle. During last month, however, when I was staying for a fortnight in the neighbourhood, I worked vigorously for the species, and obtained altogether about sixty specimens, most of which were in first-rate condition. We found them at first sitting on the trunks of some old birch-trees, in a very peculiar attitude, which reminded me strongly of the fable of the ostrich, thinking to escape its pursuers by hiding its head in the sand. The head and thorax of the insect are thrust deeply into the crevices of the bark, while the body, with the wings wrapped closely round it, something after the fashion of *Phoxophora meticulousa*, sticks out at right angles, and is thus very conspicuous, though the colour of the wings closely resembles that of the birch bark. I visited the same spot, however, on a wet day, and found that the trees were now entirely deserted, while the moths were perched on dead stems of bracken, burnt sticks of heather, &c., at the height of a foot or so from the ground; but on a third day, visiting the spot in fine weather, in the company of Mr. Freer, of Rugeley, I came to the conclusion that only a small proportion were to be found on tree-trunks, while by far the larger number preferred the dead sticks, bracken, &c., which lay in plenty all round. The insects were not to be found in such conspicuous positions as they had been on the wet day, but they were far more abundant. I took eighteen on this day, Mr. Freer forty, and two of my children, who were with me, a dozen more. The moths were not always perfectly quiet when boxed, and I found that the common chip-boxes suited them much better than the glass-topped ones, which I generally use. I did not try to take them at sugar, as the locality is somewhat awkward to work in at night; and the little experience that I had of "sugaring" this year on the Chase proved very disappointing. But I got sufficient for my requirements by the means I have mentioned; and I dare say that others, who have access to any of the localities where the insect occurs, will meet with like success. I should add that *Calocampa*

solidaginis is a little uncertain as to the time of its appearance. This year I took my first specimens on August 21st; last year they were getting past their best on August 18th; and in 1886 I got them in fine condition on August 26th.—[Rev.] C. F. THORNEWILL; The Soho, Burton-on-Trent, September 12, 1888.

[*Calocampa solidaginis* comes to sugar freely in Scotland, and would, doubtless, on Cannock Chase.—J. T. C.]

URAPTERYX SAMBUCARIA, LARVA OF. — On the morning of October 12th I found a nearly full-grown larva of *U. sambucaria* on the stem of a chestnut-tree in the park, four feet above the ground. There was no ivy in the vicinity, but plenty of elderberry at a distance of about thirty yards. I have never heard of this insect feeding on chestnut leaves.—A. KNOBLAUCH; 32, Tennyson Place, Bradford, Yorks.

BOARMIA GEMMARIA, VAR. PERFUMARIA, IN YORKSHIRE.—In the 'Entomologist,' page 248, is a statement of mine to the effect that *Boarmia gemmaria*, var. *perfumaria*, "is almost entirely confined to the London district." Towards the end of last month, but too late for correction, I learned that it was found in Yorkshire, as I received specimens from Mr. Young which had been bred from Rotherham larvæ. On the appearance of my note, Mr. Porritt was good enough to send me a long series of dark specimens, bred from larvæ found in his own garden in Huddersfield. The larvæ were fed on ivy, as also were those from which Mr. Young bred his specimens. Mr. Porritt informs me that it is the usual form taken in the Huddersfield district. He writes:—"Your statement in the current number of the 'Entomologist,' that the var. *perfumaria* of *B. rhomboidaria* is almost confined to the London district, has somewhat astonished me, for I thought you knew it was the only form we get hereabouts, and I believe throughout the south of the West Riding. I send with this some specimens bred from ivy in my own garden this year, which are probably a fair representation of the Huddersfield form." These specimens were slightly darker perhaps than the general run of our London ones, but there is no difference between them and the darkest of my specimens. On the strength of my statement that I consider it simply a case of "protective" melanism, I should not be surprised now to find that it was found in most manufacturing districts.—J. W. TUTT; Westcombe Park, S.E.

EPHESTIA KUHNIELLA.—This insect being quite an important pest, it is the more desirable that there should be no inaccuracy in what is published concerning it; and I therefore pray that I may be allowed at once to rectify an error which appears in the Proc. South London Entom. and Nat. Hist. Soc. for 1887, which I have received to-day. On p. 58 I am stated to have exhibited larvæ (which afterwards proved to be *E. kühniella*), and to have remarked concerning them that they lived in flour which had been shipped from America to Trieste, and thence to London. What I really did say, was that the larvæ then exhibited were in flour from America, but that they were supposed to have come from some Trieste flour in the same warehouse, which was likewise badly infected. Full details concerning this particular lot of flour, and the larvæ infesting it, were published in 'The Miller,' 1887, p. 446, by Mr. S. T. Klein.—T. D. A. COCKERELL; West Cliff, Colorado, September 13.

TORTRIX PICEANA IN HANTS.—*Tortrix piceana* has been re-discovered in the New Forest, by Mr. Charles Gulliver, Ramnor Enclosure, Brockenhurst. When visiting him a month or so ago, I noticed some among his odds and ends, and pointed it out to him as remarkable. He kindly gave me three specimens.—S. J. CAPPER; Huyton Park, Huyton, October, 1888.

LEPIDOPTERA IN HANTS.—I arrived in the New Forest on August 11th last. Next day, Sunday, was damp with a fine drizzling rain, but I managed to get a good walk to Lyndhurst and back. Monday proved a very sunny, bright day, although a strong wind was blowing. I had my net, bottle, and a small collecting-box with me; and so, having procured a waggonette, set out for a long drive in the forest, going first through the villages of Bartley and Minstead, and out upon Stony Cross, until we reached Boldre, Mark Ash, and Knight woods; passing out of which we came upon the Bournemouth road, and home through Lyndhurst. *Argynnis paphia* was abundant everywhere; in fact, in some places it absolutely swarmed, the blossom of the bramble apparently being very attractive both to this and many other species, including *A. adippe*, *Limenitis sibylla*, *Thecla quercus* and *Lycæna argiolus*, of which I saw one specimen in Boldre Wood. At the same spot I saw four *Argynnis valesina*, two of which proved on capture to be rather worn. A single

Vanessa cardui was noticed, and was, I think, the smallest specimen of this butterfly that I had ever come across. *Apatura iris* was seen once in Boldre Wood, and also in Knight Wood; on both occasions, however, the "emperors" were out of reach. In the plantations close to Lyndhurst Road Station, I found *Satyrus semele* in tolerable abundance, and observed that some of the specimens kept settling on the trunks of the fir trees, and when in this position were far from easily detected. This butterfly was also found on Stony Cross. Besides those already mentioned, most of the common Diurni seemed abundant in the forest, *Hesperia sylvanus* alone being seen only once. Tuesday was even a better day than Monday, as the sun was more powerful, and the strong wind had dropped; but having to return home by an early train, further collecting in this lovely spot was postponed until another season.—W. H. BLABER; Sussex Lodge, Groombridge, Sussex, October 19, 1888.

LEPIDOPTERA IN SOUTH WALES.—Having been very successful in taking *Stilbia anomala* last year near Tenby, I visited the same locality again this season, and in spite of the heavy rains about the time of their emergence, I took about two dozen in fair condition. They are not so good as last year's captures. The wet weather put a stop to all collecting, only a few *Agrotis vestigialis*, *Luperina cespitis* and *L. testacea* coming to light. The nights being very cold, sugaring proved a complete failure, but I heard from a friend in Tenby that in June and early in July *Agrotis ripæ*, *Mamestra albicolon*, and *Leucania littoralis* came freely to sugar; also two or three *Agrotis lunigera*. The larvæ of *A. ripæ* were again plentiful among the sand-hills around Tenby, feeding on *Cakile maritima* and *Eryngium maritimum*.—J. JAGER; 180, Kensington Park Road, Notting Hill, September 18, 1888.

LEPIDOPTERA IN CUMBERLAND.—The weather has been cool and showery; therefore I have not taken many insects; but amongst them, in July and August, were only the more ordinary kinds, such as *Aplecta nebulosa*, *Charæas graminis*, *Bryophila perla*, *Agrotis tritici*, *Galleria melonella*, *Ellopiæ prosapiaria*. The wind has been chiefly from the north-east and west. Sugaring at present is useless.—M. ROUTLEDGE; Hayton, Carlisle, August 23, 1888.

LEPIDOPTERA IN CARMARTHENSHIRE.—From 1886 to 1888 I have taken in this county the following Lepidoptera:—One imago of *Amphidasys stratiaria*, from a larva found; also one imago of *Dicranura bicuspis*, from larva. Twelve larvæ of *Stauropus fagi*, from which eight imagines were obtained, the other four chrysalids having become too dry: not one specimen ichneumoned. Three larvæ of *Notodonta trepida* taken in 1888. From twelve larvæ of *Acronycta alni* taken in 1887 three imagines were obtained, nine being ichneumoned; several were taken in 1885 and 1886, and three in 1888, which were feeding on oak and alder; in all seven imagines have been obtained. Newman, in his ‘History of British Moths,’ does not mention the larva of this species when young. At this stage of existence it resembles exactly the excrement of a small bird, and any one might pass it by as such. At the third moult it becomes black, with the usual yellow or orange transverse bars. It is always found on the upper surface of the leaf, with its head turned round, touching its body in some cases, in others not quite touching. It feeds chiefly on hazel, sometimes on alder and birch, also on oak. According to Newman, it spins in the leaves of its food-plant; but every specimen, without exception, which I have had has turned to a plain chrysalis an inch below the surface of the ground. They are generally ichneumoned; hence, I suppose, their rarity in Carmarthenshire. Nine larvæ of *Acronycta leporina* were taken, from which five perfect insects were obtained; they, too, are very subject to ichneumons. Six imagines of *Dianthæcia nana* were taken in a net at common garden rocket. One imago of *Plusia bractea* was taken on the wing.—M. GRASKE; Llwyn Celyn, Llandovery, Sept. 4, 1888.

LEPIDOPTEROUS LARVÆ NEAR SHEFFIELD.—My friend Mr. J. Batty and I devoted the afternoon of September 17th to beating for larvæ of *Cymatophora fluctuosa*. I am pleased to say that we succeeded in taking a few, though the larvæ were very scarce and only occurred sparingly. A few larvæ each of *Drepana lacertinaria*, *Notodonta dromedarius*, *N. dictæoides*, *Lophopteryx camelina*, and *Cidaria corylata*, on birch; and *Venusia cambricaria* on mountain ash. We were rather late for most species, or we might have succeeded in taking a rather larger number than we did. — A. E. HALL; Norbury, Sheffield, September, 1888.

CAPTURES IN THE NEW FOREST.—The following list of insects noticed here during July, may be of some interest:—*Satyrus semele*, neighbourhood of Brockenhurst Road, in good condition. *Argynnis euphrosyne*, Beechin Lane, worn. *A. paphia*, Beechin Lane. *Limenitis sibylla*, Beechin Lane; this and the last-named species in splendid condition, freshly emerged. Also the commoner species of Rhopalocera. *Nemophila russula* (male), neighbourhood of Brockenhurst Road and in Matley Bog. *Libellula depressa*, Matley Bog, and pond at bottom of Beechin Lane, fairly common. *L. quadrimaculata*, pond at bottom of Beechin Lane, fairly common. *Sympetrum striolatum*? pond at bottom of Beechin Lane, common. *Orthetrum cærulescens*, Matley Bog, one female. *Anax imperator*, pond at bottom of Beechin Lane, two specimens seen. *Calepteryx* ———? Matley Bog, Beechin Lane, common. The *Calepteryx* found here and at Savernake Forest, Marlborough, has the whole of the wings of a dark and smoky tint in the case of the male; while that found by the Thames at Windsor has the extremity of the wing transparent: I believe them to be two distinct species, and that the last one is named *virgo*. *Pyrrhochroma minima*, Matley Bog, and pond at bottom of Beechin Lane, fairly common. *Lestes sponsa*, Beechin Lane, near pond, one female caught. Agrionidæ (blue), common by pond in Beechin Lane; two or three kinds, probably; *cyathigerum*, *pulchellum*, and *elegans* as well. Scorpion-flies in all the hedges and furze-clumps in great abundance. A few fine Ichneumonidæ; also large dipterous insects (genus *Bombylius*, I believe). Geometridæ and Tortricidæ plentiful. Insects generally late in appearance, corresponding to the backwardness of the season.—F. A. WALKER, D.D.; Dun Mallard, Cricklewood, N.W.

UNUSUAL PAIRING.—When sugaring on August 10th I took a *Xylophasia monoglypha*, in copulâ with a female *Hadena trifolii*. I killed them at once, and have the pair now in my possession still coupled.—(Major) CHAS. PARTRIDGE; The Castle, Portland, September 23, 1888.

SIREX JUVENCUS IN LONDON.—While walking through the Cattle Market, Islington, on September 6th, I found one of these sawflies resting on the stones. It was very quiet and did not attempt to fly, but when boxed it became very restless. It must have travelled some distance from its breeding-place, there being

nothing but houses in Islington. — S. ROBINSON; Clayfield Terrace, Winchmore Hill, N.

HEMILEUCA DIANA, Packard. — On September 20th, last year, I obtained a specimen of this fine moth in Mesa County, Colorado, amongst oak-scrub (*Quercus undulata*), on the north slope of the Grand Mesa. This species was originally described from Plum Creek, Colo., in 1874, and is now generally united with *H. juno*, Pack., of which it is perhaps a geographical race. It has not previously been recorded from Mesa County. — T. D. A. COCKERELL; West Cliff, Colorado, August 20, 1888.

THE SEASON OF 1888. — Mr. White's note on the effect of meteorological conditions upon insect life, published in the September number of the 'Entomologist,' raises several questions well worthy of attention, and I trust that the statistics of captures for which he asks may be forthcoming, as they will doubtless prove of interest. My own list of captures and emergences from pupæ is unfortunately scanty, yet there are a few entries in my diary which may possibly aid the greater body of material which others no doubt have at hand. On July 5th I took three fresh specimens of *Tephrosia crepuscularia* in a locality in which the species is often found during March or April. On July 9th a newly-emerged imago of *Cucullia umbratica* was captured; on the 12th and 19th of the same month specimens of *Chærocampa elpenor* emerged from pupæ; on the 16th, *Chelonia villica*; and between the 24th and 30th, two *Smerinthus ocellatus*; these pupæ were all kept in a summer-house with south aspect. On July 18th I found upon a fence a specimen of *Acronycta megacephala*, with wings still unexpanded. All the above should certainly appear in June in an ordinary season. In another breeding-cage, in a room with south aspect, were four pupæ of *Deilephila euphorbiæ* (Austrian); imagines from these emerged on July 19th, August 2nd, 4th and 12th. June is the month usually assigned to this species. At Guildford, on September 12th, *Satyrus semele*, *S. megæra*, and *Vanessa polychloros*, were flying in fine condition. It seems scarcely fair to make a comparison between the hot dry summer of 1887 (when larvæ undoubtedly hatched and fed up with more than usual rapidity) with the sunless season of this year, but I may just mention that on August 2nd, 1887, but few larvæ of *Euchelia jacobæ* were to be found, most of

them having already entered the pupal state, whilst at the present time (Oct. 2nd) I have in my breeding-cages a good number of larvæ of that species, still unchanged, and by no means full-fed. The great majority of the autumn brood of larvæ of *Pieris rapæ* last year pupated in August and September, but the corresponding brood this season is so late that some of the larvæ are now to be found about a quarter of an inch in length. The season altogether has been so remarkable, that it seems well that a full record of the dates of insect occurrences should be made, if only for the sake of comparison with future years, normal and otherwise; whilst the opportunity offered for testing the various theories respecting melanism, to which Mr. White calls attention, should certainly not be neglected by those who have material at command.—GEO. C. GRIFFITHS; 1, Hale Bank, St. Matthew's Road, Cotham, Bristol, October 11, 1888.

ERRATUM.—Entom. p. 258, line 5, for railway read railing.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—October 3rd, 1888.—Dr. D. Sharp, F.L.S., President, in the chair. Mr. Albert H. Jones was admitted into the Society. Mr. F. P. Pascoe exhibited a number of new species of *Longicornia* from Sumatra, Madagascar, and South Africa. Dr. P. B. Mason exhibited, for Mr. Harris, a specimen of *Chærocampa Nerii*, recently captured at Burton-on-Trent. Mr. S. Stevens exhibited a specimen of *Vanessa antiopa*, which he caught in the Isle of Wight in August last. Mr. Stevens asked whether Mr. Poulton or any one else present could inform him why, in British specimens of this species, the border of the wings was almost invariably a pale straw-colour. A discussion ensued, in which Mr. F. D. Godman, Mr. M'Lachlan, Mr. Kirby, and Dr. Mason took part. Mr. E. B. Poulton exhibited a living larva of *Smerinthus ocellatus* in the last stage, fourteen larvæ of *Boarmia roboraria* and some cocoons of *Rumia cratægata*. The object of the exhibition was to show the influence of special food-plants and surroundings on the colour of the larvæ and cocoons. Mr. M. Jacoby exhibited a varied series of *Titubæa sanguinipennis*, Lac., from Central America. He stated that many of the varieties exhibited had been described as

distinct species. Mr. Billups exhibited specimens of *Bracon brevicornis*, Wesm., bred from larvæ of *Ephestia kühniella*. He remarked that this rare species had only been recorded as bred on two or three occasions—viz., by the Rev. T. A. Marshall, Mr. W. F. Kirby, Herr Brischke, and Mr. Sydney Webb. Mr. W. Warren exhibited specimens of *Antithesia ustulana* and *A. fuligana*; also bred series of the following species:—*Eupeccilia Degreyana*, *Stigmonota pallifrontana*, *Cacæcia decretana*, and *Gelechia peliella*. Lord Walsingham exhibited specimens of several species of the genus *Cryptophasa* belonging to the family *Cryptolechidæ* of the Tineina, some of the most remarkable being males and females of *Zitua balteata*, Walker, bred by Mr. Sidney Olliff from pupæ found in January last, at Newcastle, New South Wales, in burrows in branches of a species of *Acacia*. Lord Walsingham also exhibited a male of *Zelotypia stacyi*, received from Mr. Olliff. Mr. F. D. Godman exhibited a larva of a *Cicada*, from Mexico, having a fungoid growth on the head. Captain Elwes exhibited a large number of Butterflies, representing about 108 species, recently collected by himself and Mr. Godman in California and Yellowstone Park. The collection included many species of great interest, amongst others a species described by Mr. W. H. Edwards as *Erebia Hadenii*, but which he considered would prove to be a *Cænonympha*; a very rare species of *Thecla*; and a remarkable series of species of the genus *Colias*. Mr. H. Goss exhibited, for Mr. W. J. Cross, an extraordinary melanic variety of *Agrotis segetum*, caught by the latter near Ely in July last. Mr. W. L. Distant read a paper entitled “An enumeration of the *Rhynchota*, received from Baron von Müller, and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson’s expedition.” Mr. Poulton read a paper entitled “Notes in 1887 upon Lepidopterous larvæ, including a complete account of the life-history of *Sphinx convolvuli* and *Aglia tau*”; and Mr. White exhibited specimens of preserved larvæ of *S. convolvuli*, *A. tau*, and other species referred to in Mr. Poulton’s paper. Mr. Jenner Weir, Mr. Kirby, Mr. White, Dr. Sharp, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—27th September, 1888. T. R. Billups, F.E.S., President, in the chair. Mr. G. Elisha exhibited *Eupithecia extensaria*

and other species. Mr. Auld, an example of *Callimorpha hera*, which he said he took in South Devon, flying in the sunshine; also two examples of *Vanessa io*, with additional ocelli. Mr. R. Adkin, *Thera simulata*, bred from larvæ taken in Ireland; *T. firmata*, bred from larvæ taken in the New Forest; and a living larva of *Deilephila galii*. Mr. Jäger, three specimens of *Callimorpha hera*, bred from ova obtained from a specimen taken in 1887; also a fine series of *Stilbia anomala*. Mr. Tugwell, living larvæ of *D. galii*, and called attention to the variation in the colour of the larvæ shown. He remarked that this year the larvæ of this species were exceedingly plentiful, Mr. Gibb and himself having taken 196 in a district extending from St. Margaret's Bay to within a mile or so of Ramsgate.

October 11th. — The President in the chair. Messrs. H. Bennett, of Hastings, and E. D. Y. Pode, of Ivybridge, South Devon, were elected members. Mr. T. R. Billups exhibited species of British Fossorial Hymenoptera,—*Ceratophorus morio* and its rare var. *anthracinus*, taken in his garden at Peckham, and *Nysson dimidiatus*, from Chobham. Mr. R. Adkin, larva of *Retinia resinella*, and contributed notes. Mr. J. Jäger, an example of *Vanessa io* with additional ocelli; *Argynnis paphia* with white blotches on the wings; a variety of *Satyrus semele*, with many other species, and contributed notes. Mr. Carpenter, varieties of *Vanessa atalanta* and *Amphipyra pyramidea*. Mr. Elisha, bred examples of *Cidaria reticulata*. Mr. Tugwell, *Callimorpha hera*, bred from the same batch of ova as those of Mr. Jäger; also *Crambus alpinellus* and *Anerastia farrella*, from King's Lynn.—H. W. BARKER, *Hon. Sec.*

PENARTH ENTOMOLOGICAL SOCIETY.—At a meeting held on September 18th, Mr. T. L. Howe exhibited two specimens of *Colias edusa*, caught on the 16th, about two miles from Penarth, he having seen six other specimens and also one *Vanessa c-album*. It was reported that *Plusia gamma* had been very abundant about there during the past summer, some specimens appearing at sugar being remarkably bright and well-marked. *Vanessa cardui* has also been very plentiful in the district.—G. A. BIRKENHEAD; *Hon. Sec.*

REVIEW.

A List of British Diptera. By G. H. VERRALL, F.E.S. London Pratt & Co., 15, Mill Street, W. 1888. 33 pp., small 4to.

THIS is the first and only separate List of British Diptera ever published, and has the advantage of being compiled by one of the leading dipterists of Europe. Lists were included in Curtis' 'Guides' (1829 & 1837), Stephens' 'Catalogue' (1829), and Morris' 'List' (1865). This new list, however, brings the subject well up to present knowledge, but an early edition or supplement will be required as the study of Diptera extends.

The arrangement of families is probably the best ever yet adopted; the notable points being the inclusion of Pulicidæ in Nematocera, the manifestly natural reversion of order of the Mycetophilidæ, thus making a continuous progress from Cecidomyidæ through Lestremia on the one side, and Sciaria on the other side to Mycetophilidæ. Brauer's sub-families of Stratiomyidæ are admitted, the Leptidæ are placed between the Tabanidæ and Asilidæ, and all precede the manifestly allied Bombylidæ, Therevidæ, and Scenopinidæ. Kowarz's arrangement of Dolichopodidæ is followed, as it seems to bring allied genera in closer connection than any other system. It would possibly be better reversed, bringing Aphrosylus next the Empidæ, and the yellow groups next to Lonchoptera. Placing the Œstridæ between the Conopidæ and Tachinidæ is a novelty which requires testing. *Sphecolyma inanis* is unexpectedly placed under Dexidæ, instead of its usual place in Anthomyidæ; and *Calliphora cognata* with *C. sepulchralis* come under Muscidæ instead of Sarcophagidæ. All the old sub-families of Muscidæ are treated as families; probably some of these will ultimately be re-united. In the Anthomyidæ, Meade's arrangement has mainly been followed; but as four sub-families are for the first time indicated, a few species are forced away from their old allies. Many of the generic names in Ortalidæ and Trypetidæ will be strange to English eyes. Phoridæ next to Borboridæ seems natural, and has already been so placed by Schiner, but the whole group of Hypocera seems ignored. Naturally the Hippoboscidæ and the apterous Braulidæ and Mycteribidæ close the arrangement.

Scarcely any synonyms are given, and this seems a pity, but

probably more will soon be heard of this in a new edition when material serves. A few 'Catalogue' names seem to occur which, of course, will remain such until a description is given somewhere. Mr. Verrall states in his preface to the 'List' that he has not personally studied some groups; and though he does not say so, we presume all names in italics mean species insufficiently recognised as British. We see there are over 500 of these in the 'List,' which consists of about 2500 species. A vast amount of more work requires doing in the Mycetophilidæ, Chironomidæ, Empidæ, Tachinidæ, and nearly all the groups which used to be comprised under the term Muscidæ Acalypteræ.

Now that another excuse is removed by the publication of this List of British Diptera, entomologists in this country will surely pay more attention to the group. It only remains for Mr. Verrall to follow with a manual of Diptera for the use of young students and a cabinet label list, when we are satisfied the dipterists would become well-nigh as numerous as the lepidopterists.—J. T. C.

OBITUARY.

JOHN SCOTT was born at Morpeth, September 21st, 1823, and died August 30th, 1888, in the 65th year of his age. From an early period Mr. Scott took interest in the study of Nature, and was a contributor to the entomological serials, chiefly as a lepidopterist, during the years following 1849, until about 1862, when he began to report upon the order Hemiptera, with which his name will be chiefly associated in time to come. The well-known work published by the Ray Society in 1865, upon British Hemiptera, of which he was joint author with Mr. Douglas, still remains a standard work, as also does the 'Catalogue of British Hemiptera,' published by the Entomological Society of London in 1876, with which list Mr. Scott was also associated. His remaining literary work is scattered through transactions of societies and periodicals, both English and foreign. Mr. Scott was an ardent worker in the field and in his study. Always bright and genial, until afflicted with a mental disease that formed part of the complication which at last caused his death, Mr. Scott had many friends, and was indeed deservedly popular among entomologists.—J. T. C.



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ON THE CAPTURE OF FORMICARIOUS HISTERIDÆ.

BY G. LEWIS, F.L.S.

LAST February, as I passed through Paris *en route* to the south, I told Monsieur L. Bedel that I wanted to search particularly for *Hetærii* during the three months I intended to be away from England, and his immediate reply was, "Find the larvæ of the ants and the beetles will be found amongst them"; and M. Bedel afterwards said, "They are more easily found in rainy than fine weather." With these hints fresh in my mind, I left Algiers by rail, on the 17th February, for Bou Medfa, and, after reaching the station there, an hour's drive brought me to Hamman Rirha, the Aquæ Callidæ of the Romans. The altitude of the hotel there is about 2200 feet above sea-level, and I did not at any time go much higher. The weather was so bad that I could not leave the hotel until the 21st, but then a short period of sunshine enabled me to reconnoitre with a view to subsequent work, and I fortunately found a single *Sternocælis*, which gave me the clue to a spot which afterwards proved to be a very good place for the species I most wanted.

It is better to say here that on a study of the species I brought home, I thought it well to divide *Hetærius* into two genera,—*Hetærius* and *Sternocælis*; and a paper on this subject appeared in the 'Annals and Mag. Nat. Hist.' in July. This arrangement left only one African species in *Hetærius*, Erichson, viz., *H. plicicollis*, Fairm. The British species *ferrugineus*, Ol., which is the type of *Hetærius*, is an insect which appears to be

as I stated, nearer to *Eretmotus* than *Sternocælis*; and the same remark applies also to the insects assigned to the genus *Satrapes*, Schmidt.

On the 20th of February it snowed the greater part of the day, and although I remained at Hamman Rirha until the 8th March, in all twenty-one days, there was only one day which was fairly fine and without rain. The season was, therefore, favourable for the finding of the insects I wished for; but the muddy condition of the paths and the slipperiness of the mountain-slopes, owing to the rain, made walking very difficult. The most productive slopes for *Sternocælis* I found to be those to the south of the hotel, and to get at these it was necessary to wade a small river. After crossing the stream the mountain of Zacca, altitude about 5000 feet and snow-topped, was on my right, and lying nearly due west. The surface of the slopes, which rise beyond the river, is of stiff clay; and the least disturbed portions of the slopes, and the best for insects, are those where the gigantic *Scilla maritima* grows, and where there is no scrub, but only short grass. Here and there I could see places where the land had been in recent times disturbed, perhaps by rude cultivation by the Arabs before the French occupation, and these spots I avoided. In all the places I have been to in Algeria and Morocco, whenever I found scrub the hill-sides have been, comparatively speaking, unproductive of Coleoptera; and Mr. J. J. Walker has observed the same thing. Possibly the scrub does not grow freely on the more clayey parts of the hills, and the beetle-fauna of the southern border of the Mediterranean is in a great part a *crevice-fauna*. Beetles live under stones (many are blind), where in the dry and hot season they have easy access into the crevices of the clay, and in the wet season the soil swells and encloses them for the winter under a solid stone roof.

The ant here which attracts the beetles is an *Aphænogaster*, a large black species, clothed with greyish hairs, and it is very abundant, and makes a nest under stones which are half embedded in the clay. The stones chiefly used by the ants are those of a fair size, averaging about 10 to 18 inches in the widest part. The smaller stones might perhaps serve the purposes of the *Aphænogaster* equally well, but they are frequently disturbed by the feet of the goats which are pastured on the slopes, and the ants when roughly disturbed have the

habit of removing their nests elsewhere. Of the middle-sized stones, the best for the searcher's purpose are those which when lifted expose all the galleries of the nests, as then the beetles, if there, are seen at once; but if the galleries are on a lower plane, or at the edge of the stone, the soil must be pressed aside to give a clear view of the excavations in which the larvæ are being reared. The Histeridæ are generally found feeding on the larvæ, attaching themselves to them by their mandibles and legs; but of course I also saw a good number in the galleries near where the larvæ were stored, this being the case especially with *S. hispanicus*, *arachnoides*, and even *fulvus*, which are evidently by habit more active than the shorter-legged species, as *cancer* and *punctulatus*. When a nest is laid bare the first instinct of the ant is to remove their larvæ into the lower galleries, and store them away out of the sun and air, and the Histeridæ follow them as quickly as possible, for, like all pale subterraneous species, they are not comfortable in the light.

I cannot record an instance of an ant molesting a beetle, and it seemed to me they were either unconscious of their presence or utterly indifferent to the mischief they were doing; so much so, that on two occasions I saw a *Sternocælis* cling to the abdomen of the *Aphænogaster*, and ride into a lower gallery on its back. At another time I saw *Sternocælis* sticking to a mass of larvæ, which an ant was removing to a place of supposed safety, after I had disturbed the domestic arrangements of the nest. *Aphænogaster* seems to me to be weak in its mandibles, and it is also deficient, as compared to *Formica rufa* and *fuliginosa*, in formicic acid; and this may point to one of the causes why *Hetærius* and *Sternocælis* have been able to install themselves in the nests of the ants, where they do an injury, which, from the care the ants are seen to take of their larvæ, we must presume they would were they conscious of it, and able to retaliate, violently resent. If an *Hetærius* could be fixed between the mandibles of an ant, I think it would be seen that the purchase the ant could bring to bear on the comparatively hard exo-skeleton of the beetle would be very slight, as the mandibles would in this position be too far widened out to admit of much pressure. I incline to the belief that the ants are physically incapable of either freeing their nests of the intruders, or of destroying them within it; and am I crediting them with too much philosophy in

saying, that with this knowledge they have ceased to trouble themselves about evils they cannot divert?

An Englishman's experience of ants may be that they frequent dryish and rather sunny places, but the insects on the southern border of the Mediterranean basin suffer at seasons from great drought, accompanied with a high temperature, so that to be in moistened places in the hot season necessitates the residence at other periods in situations which are exceedingly damp. Thus the western and northern slopes of the hills of moderate elevation in Algerian latitudes are much more frequented by insects of ground habits than those of a southern aspect; but this remark will not apply to the higher ranges of the Atlas. During February and March I have turned over stones on the slopes, and in doing so have let surface-water into the galleries made by the ants, which has flooded their nests. This happened this spring, both at Hamman Rirha and Tangier.

During the season of my visit to Algeria and Morocco, nearly every nest of *Aphænogaster* had larvæ in it, and the ant was at its busiest in rearing them, but I failed to find the larva of *Atta*, on which some species of the Histeridæ are said to feed, and cannot say therefore whether *Sternocælis* feeds on them also. As *Atta* is a very large ant, it may be a more southern type of the family, and it may lay its eggs later in the spring, so I cannot give any experiences of it as an "ant-host." By the middle of May the sun heats the stones, the soil becomes parched, and the *Aphænogaster* either becomes solitary or the colonies retire to cooler places. Information on this matter is of much interest to me, as I have been unable to learn what becomes of the Histeridæ (if in the imago), in the hot months of summer and autumn. In October I believe the beetles may again be found, but whether *Aphænogaster* has two broods of larvæ at different seasons of the year, or one or two in the spring, I should like Hymenopterists to tell us.

Of the early stages of the formicarious Histerids, or of their habits prior to becoming adults I believe nothing is known.

In the last stage they have retractile heads, and tarsi and antennæ which can be drawn into grooves, and are thus preserved in a great measure from any chance of mutilation of their appendages, even from species of their own sort; but if the ants could get at their larvæ, a very different situation would be

created. Small lepidopterous larvæ which fall into the nests of the ants have their moments numbered, for a dozen ants or more will join and attack a small caterpillar half an inch long. Heteriæ are not parasites in the proper sense of the term, but they are truly insectivorous in the imago state, and possibly so when larvæ, and this is probably true also of all the members of the family. *Hister pustulosus*, Géné, has been recorded as burrowing in a field after the larva of an *Agrotis*; Mr. Gorham has discovered that the imagos of *Saprinus virescens*, Payk, feed on the larvæ of a phytophagous beetle; Mr. Stevens found, at Norwood, the rare *Teretrius picipes*, Fab., hunting for *Lyctus* in the holes drilled by the latter in an oaken fence, and I have several times seen *Trypanæus* methodically chasing *Platypus*. And so probably the Histers and Saprinæ which are sometimes considered stercoraceous species, are really attracted by the insects which have congregated on the highway before them. But of the larvæ of these things we want knowledge.

As a rule, there are but one or two specimens of *Sternocælis* to be found in one nest, but I have taken as many as seventeen *S. arachnoides*, Fairmaire, at Tangier together, and at Cintra in Portugal I once obtained twenty-two *S. hispanicus*, Brisout, from one colony of ants. These two species are found in sandy places,—places where the sand will run sometimes into the galleries of the nest when the stone is removed, as easily as from one division of an hour-glass to another. Yet the majority of the North-African species occur on the clay. *Sternocælis acutangulus*, Lewis, is a genuine clay-species, and on the 8th April last I turned over a stone, measuring about ten inches across each way, which was firmly embedded in the clay, and found in a crevice of it several of the beetles. There was a small nest of *Aphænogaster*, and in the crevice about an inch long, a mass of larvæ had been stored. Here I saw at first one, then another, and by using a straw extricated seven more, which, till then, were concealed beneath the larvæ.

Eretmotus is not so persistently attached to ants as *Sternocælis*. I took three specimens near Tangier, on April 5th, from under a small stone where there were no ants, and one of them was immature, so I think it likely their period of pupation is undergone away from ants, nor can anyone assume that in the quiescent state they can be dependent on them. Again, on

April 10th, I took two specimens running over a pathway in the sunshine on an excursion by themselves, so perhaps they hunt for the nests of *Aphænogaster* in the same manner as *Teretrius* chases the *Lyctus*. And near Madrid, on the 24th April, two specimens of *E. ibericus*, Brisout, were found under a stone where there were only four or five ants and no nest that could be seen within some distance.

The following is part of my last winter's itinerary, and a memorandum of my captures referred to in this note:—

Hamman Rirha.—17 February to March 3. *Sternocœlis fulvus*, Lewis; *S. punctulatus*, Lucas; *S. cancer*, Lewis; *Eretmotus approximans*, Fairmaire.

Tlemcen.—15 March to March 20. *Sternocœlis setulosus*, Reitter; *S. pectoralis*, Lewis.

Oran.—20 March to March 24. *Sternocœlis setulosus*, Reitter.

Tangier.—27 March to April 11. *Sternocœlis mauritanicus*, Lewis, *acutangulus*, Lewis; *S. arachnoides*, Fairmaire; *Eretmotus tangerianus*, Marseul.

Madrid. — 24 April. *S. hispanicus*, Brisout; *E. ibericus*, Brisout.

Escorial.—25 April to May 1. *S. hispanicus*, Brisout; *S. marseuli*, Brisout; *Eretmotus ibericus*, Brisout.

St. Jean de Luz.—May 2. *Hetærius ferrugineus*, Olivier.

Wimbledon, September 1, 1888.

A LEPIDOPTERIST'S MEMORANDA IN 1888.

BY J. B. HODGKINSON.

IN the month of March I brought all my breeding-pots indoors to do a little forcing, so that my time later could be used for collecting. On March 30th the first *Nepticula gei* appeared; after that I had a succession of species in that genus appearing; which came out in order as follows:—after *gei*, *ignobilella*, *hodgkinsonii*, *centifoliella*, *lapponica*, *aucupariella*, *minusculella*, *gratiosella*, *pygmæella*, *oxyacanthella*, *desperatella*, *tibiella*, over 60 of this species; previously I had only two bad specimens. Then came out from the alder, *glutinosella* and *alnatella*; from birch,

continuella; *anomalella*, by the score, from rose. From alder I bred 300 *Lithocolletis frölichella*, 30 *L. kleemannella*, a few *L. stettinensis*, and several of the genus *Ornix*.

During the month of April I found some tadpole-shaped white larvæ on my table. I could not think what they would be until I saw one squeezing itself out of a tin box. Then it struck me that I had a lot of *Carex vulpinus* in it. I had looked carefully with a glass several times to see if any traces of larvæ were to be found, but could find none; however, I turned all the seeds into a pot among some moss, and during the month of June bred about 20 *Glyphipteryx oculatella*. About the 26th of May I made a journey for *Catoptria aspidiscana*; although the wind blew hard, there was a fair amount of sun, so I got about 60 in three hours.

I made a journey to Windermere during the first week in June, and made a fairly good bag, the best being *Micropteryx mansuetella*, perhaps a dozen, but as usual they died before I got them home. On the first of June I went on the moors to collect. The weather was cold with very little sun. I went where I could get out of the cold, and collected about 100 mines of *Lithocolletis vacciniella*, only a dozen came out however, all the rest were ichneumoned. About the 12th of June I wanted some fresh *Incurvaria canariella*, but found my old locality had been fired the season before with a jubilee bonfire, which caused me to feel disloyal. I went exploring through a large nut-wood, and came upon a charmingly secluded spot, and here met with *Eriopsela fractifasciana*, a rare species in the north. The next moth was a Plume; I secured it, but did not know my prize until pinning it at home. I at once saw that it was a very fine specimen of *Mimæseoptilus hodgkinsoni*, nothing like *zophodactylus*, not any of the slaty shade that is on either *M. bipunctidactylus* or *zophodactylus*. The other two that I took were in early June, and none of the food-plant of *zophodactylus* grows near either of the localities where *M. hodgkinsoni* have occurred.

My next ramble was into Argyleshire to look for *Scopula decrepitalis*. Very few have been met with since the late Dr. Chapman used to take it some twenty-five years ago, and I could only muster three specimens in my collection. The weather was superb, everything that could be desired. I had the benefit of my friend Mr. Watson's net also, otherwise I should

have fared badly. *Melanippe tristata*, both in the Rannoch brown form, and the English form, were in profusion. Several Pugs were taken, *Eupithecia satyrata* in abundance, on the high hills, but a strong wind carried them off. Those of Argyleshire are not far off being the variety *curzonii*. The *E. lariciata* were in profusion. Large and dark *Cidaria corylata* and *C. silaceata* were not at all rare, the former very fine forms. *Emmelesia adæquata* just appearing, with also *Sericoris palustrana*, and *Gelechia expolitella*. *Scopula decrepitalis* were difficult to get out from their hiding-places. It required an experienced eye to find them. When disturbed they just hop and settle again. I could not find any time of flight, either in early morning, hot sun, or in the evening. *Botys fuscalis* was quite the reverse, it was active enough, in fact a pest, as both occur at the same place.

My next ramble was in Renfrewshire, where the black *Thera variata* occur. Moths were in profusion, *Coccyx cosmophorana* was flying briskly round the tops of rather too high firs; however, I had a good bag of them; also a fine series of black *T. variata*, some measuring one inch across the wings. *Eupithecia indigata* were large and dark. Several *Pædisca rubiginosana* and *Stigmonota coniferana*. Three or four of a black satin-like *Eupithecia*, which must be a new species, occurring among Scotch fir. *Melanippe hastata* turned up of the English type. *Lithocolletis caledoniella* was in profusion. Mr. Watson brought to me an insect on his hand, wanting to know if it was a fly or a moth. I quickly boxed it, and then told him it was *Talæporia pubicornis*, a moth I had never seen alive before, it was a splendid, perfect specimen. We looked for more, and I went again the following day, but we saw no more. I don't know what might turn up in such a place for variety and quantity. *Eupœcilia nana* was in swarms among birch; a few *Butalis torquatella* and *Nepticula argentipedella* also occurred among the birch. It is one of the finest pieces of collecting-ground I have ever worked. I returned home with some hundreds of moths to set.

On my arrival home I found my daughter had pinned some *Opadia funebrana*, *Penthina postremana*, and *Stigmonota roseticolana*. The larvæ of the latter pupated in the solid part of a lump of cork-bark. Over 100 came out, which reminded me of seeing at Mr. Sidney Webb's an old shoe-sole, with the empty cases of *Tinea imella* as thickly studded. It was all the more

remarkable with *roseticolana* to select one piece of cork out of others; it seemed as though there had been gregarious pupation. The first week in July I paid a visit to Witherslack, the weather was fine, the heat intense. The mosses swarmed with *Cænonympha typhon*, *Acidalia fumata*, *Aspilates strigillaria*, &c. It was too hot to be outside, so I turned among the shade of the birches, and took 60 fine *Coleophora wilkinsoni*; *Lithosia mesomella* began to fly about 7 p.m. The place was literally alive with flies, gnats, &c., and I had a warm time of it. The same week I went to Windermere, where I got a grand lot of *Nepticula intimella*, and sundry other useful specimens. About 11 a.m. I saw some *Nepticulæ* flying round a low beech bush. I netted over 100 in two hours, thinking some might be *N. fulgens*, however they were all *N. tityrella*. On removing my old series of 30 from my cabinet to replace them with these new ones, I found 8 *fulgens* among the old ones. I bred the whole lot from Windermere some dozen years ago. Whilst waiting on the *Nepticulæ*, I saw flying round a young oak, at a distance from me, what I thought were *Adela viridella*, in great numbers; I did not want any, but passing by shortly after I found they were *Ennychia octomaculata*, males, in such numbers that there must have been a female about. I boxed 14, sometimes 4 in my net at once.

Odd stragglers of *P. postrema* came out through July; *Eupithecia constrictata*, fine, slaty coloured specimens from the Isle of Man, and large *E. valerianata*, from Windermere. I went to get a few *salmacis* form of *Lycaena astrarche*, they were very scarce owing to the rain and cold winds. During a brief sunshine I swept a few off some ferns. I called on my way at Arnside, and found *Phothedes captiuncula* out. Late in July I spent three days at Witherslack, two pretty fine the other one being a drencher. The Saturday was sunny with no wind. I made a good catch of *Crambus falsellus*, *C. pinellus*, *C. warringtonellus*, and a lot of others. The day after it was blowing a gale, so I went among the junipers and took 100 *Argyresthia aurulentella*. On my return home I found several *Coleophora olivaceella* out. I bred about 20 out of 30 cases from some palings near Preston. I was not satisfied with the poor supply of birch *Nepticulæ*, so I tried a new place, and found what used to be an open space, with young birch and firs, now a dense thicket; on the

borders I found a large supply of *N. continuella*, and other birch feeders.

During the first week in August I was staying at Blackpool; moths were in abundance. I did not look after the Macros. There were plenty of *Choreutes myllerana*, and oddly enough on a few yards away there grew the grass from which I took *Elachista monticola*, on the moors some thirteen miles away. I had seen this patch before, but could find nothing among it. This year I took over 50 of them in fine order, nearly all males.

During the first week in September I was in Scotland for mines of *Butalis torquatella*. I still saw some mines with larvæ of *N. continuella* in them; and on a patch of *Potentilla* I saw mines of *N. terella*. I brought all the lot home to take their chance. My sole catch for the visit was a tinful of larval mines in leaves.

Ellerslie, Ashton-on-Ribble, September 10, 1888.

ENTOMOLOGICAL WORK IN COLORADO.

BY T. D. A. COCKERELL.

THERE were seven of us, conveyed in a waggon and two buckboards—a vehicle unknown in England; and we went for work and play, either of which might come under the broad definition of pleasure, according to the fancy of the individual. Now the pleasurable work consisted of an investigation of the fauna and flora of a little-known district, scientifically speaking, namely, Eastern Custer County, and the south-western part of Pueblo County adjoining thereto. The ladies paid much attention to botany, and brought home quite a collection of plants; but the gentlemen, I regret to say, did not woo Dame Nature, their attentions being otherwise occupied; except one apparently demented individual, whose sole object in life, when he was not writing letters, seemed to be the collecting of “bugs,” whence his title, “the bug-hunter.”

The district to be investigated lies in the basin of the Arkansas River, and is watered mainly by the Hardscrabble Creek in Custer Co., and by Red Creek and the St. Charles River in Pueblo Co. In character, it is hilly and even mountainous, the

elevations ranging from 6000 to 9000 feet above the sea. The creeks mostly run in rocky cañons, which support an abundance of scrub-oak (*Quercus undulata*, Torrey), together with characteristic cacti and other low plants. Of larger trees, the principal conifers are spruces at higher elevations, and pines (*Pinus ponderosa*) throughout in suitable places, while deciduous trees are represented chiefly by cottonwoods (*Populus*, two species). As regards previous investigations, various species of insects had been recorded from Pueblo; but for the district now to be explored, no records whatever were forthcoming, except a few notes received through the kindness of Mr. H. W. Nash, of Pueblo, relating to butterflies taken by himself, *viz.*, *Papilio daunus*, Bdv., Lower Hardscrabble, Custer Co.; *Neophasia menapia*, Feld., Hardscrabble Cañon, Custer Co.; *Pieris occidentalis*, Reak., Hardscrabble; *Argynnis cipris*, Edw. (I have taken this by Short Creek, Custer Co., about 8400 ft. alt., new to Custer Co.), Beulah, Pueblo Co.; *A. edwardsii*, Reak.; and *A. haleyone*, Edw., Hardscrabble Pass, Custer Co.; *Satyrus alope*, Fab., Beulah; *Lemonias nais*, Edw., Hardscrabble Cañon; *Thecla crysalus*, Edw., Hardscrabble Cañon; *Lycæna antiasis*, Bdv., Hardscrabble Cañon; and *Nisoniades brizo*, B. & L., Hardscrabble: 11 species in all, two from Pueblo Co., and the rest from Custer. To these I had good hopes of adding.

We started on July 31st, (1888), and passing through West Cliff and Silver Cliff, stopped at noon near a mining town called Bassickville, or more euphoniously, *Querida*. This is on the western slope of the Wet Mountains, and therefore not in the district we went to explore; but I may note that the only insects observed were *Danaïs plexippus*, L., and *Colias eurytheme*, Bdv., with the pale var. of the female, *pallida*, Ckll. After lunch we pushed on, and by evening reached the upper part of the Hardscrabble district, camping near Comargo, or rather what was Comargo, since the mining camp of that name has ceased to be. This was the first locality in the new district, so I looked around that evening, and was rewarded by a few interesting plants, including an interesting variety (*pallescens*, v. nov. rather smaller than type, raceme denser and shorter, flowers cream-colour, leaves numerous) of *Lupinus argenteus*, Pursh; but the insects were represented only by a larva of *D. plexippus*, which was about to pupate under the bark of a felled pine, and

imagines of *Colias eurytheme*, and a few moths, not yet identified, which came round the camp fire at night.

The next day we drove down the Hardscrabble Cañon, but did not stop for collecting. A species of *Senecio* was in full bloom and very abundant by the roadside, and its yellow flowers proved very attractive to *Pyrameis cardui*, *Colias eurytheme*, and *Danais plexippus*, while *Limenitis weidemeyerii*, Edw., and *Vanessa antiopa*, L., were also seen in the cañon.

At noon we lunched near the Templar Rock, which is said to resemble the face of a man, at the foot of the cañon, and here another butterfly was added to the list—*Nathalis iole*, Bdv. That night we reached the north fork of Red Creek (now dry, except for a small spring bubbling up, affording clear water for man and beast, though so limited in quantity that it had to be dipped up in tin cups). This is quite near the county boundary, yet still in Custer Co. Explorations were made along the cañon of the creek, and a large number of insects taken, for we remained at the same camp the whole of the next day. Many of the species were additions to the Custer Co. list, as the different character of this district from that of the western portion of the county, which had been already explored, naturally gave rise to a somewhat different fauna. Of Lepidoptera, *Nathalis iole* (♀), *Euptoleta claudia*, Cram., *Pyrameis huntera*, Fab., *Limenitis weidemeyerii*, *Colias eurytheme*, var. *keewaydin*, Edw., and *Danais plexippus* were observed, as well as a grand *Papilio* which eluded capture, and a larva of *Lasiocampa* (sp. ?), which was found in camp. Coleoptera, also, were numerous; and the following species fell to my lot (for their identification I am indebted to Dr. John Hamilton):—*Cicindela punctulata*, var. *micans*, Fab.; (*punctulata* appears to be a wide-spread species; Dr. Hamilton writes that he gets it at Alleghany, Pennsylvania;) *Pityophagus verticalis*, which was described from a single specimen, mine being only the second example recorded; *Diplotaxis*, apparently *D. haydeni*; *Dryops striatus*; *Batyle suturalis*; *Adimonia externa*; *Disonychia triangularis*, Say; *Nemognatha immaculata*, Say; *Epicauta maculata*, Say; *Ditylus obscurus*, which is new for Colorado; and *Dendroctonus terebrans*. But the best captures were among the Orthoptera, of which, thanks to the kindness of Mr. L. Bruner in identifying them, I am able to give a list:—*Mermiria neomexicana*, Thos.; *Circotettix undulatus*, Thos.; *Tri-*

merotropis citrina, Scudd.; *Hadrotettix trifasciatus*, Say; *Ædipoda haydenii*, Thos.; *Seyllina delicatula*, Scudd.?; *Aceridium emarginatum*, Uhler; *Dissoteira carolina*, L.; *Arphia tenebrosa*, Scudd.; *Mestobregma plattei*, Thos. (apparently new for Colorado); *Philibostroma quadrimaculata*, Thos.; *Melanoplus packardii*, Scudd.; *Melanoplus atlantis*, Riley; var. with bluish hind-tibiæ, which I propose to call var. *cæruleipes*; it would appear to be a variety characteristic of the Western States, specimens from the East invariably having the hind tibiæ reddish. (See 'Report U. S. Commissioner of Agriculture for 1885,' p. 306). *Melanoplus differentialis*, Thos., black var., this and the last species are new to my Colorado list.

We had to turn out with picks and shovels, and make a road down the Red Creek Cañon, over which we eventually drove, and found ourselves just in Pueblo County, and made a camp in a grove of cottonwood trees (*Populus balsamifera* var. *candicans*), the place being known as Cottonwood Springs. This is in rather open country, the vegetation consisting mainly of *Quercus undulata*, *Juniperus virginianus*, and *Yucca*, while wild vine (*Vitis riparia*), and Virginia creeper (*Ampelopsis quinquefolia*) grew near the springs. The curious grama-grass (*Bouteloua oligostachya*) is also noteworthy, affording excellent food for the cattle which graze around. Insects were not abundant in this locality, but as nearly everything found was new to Pueblo County, such few as were obtained were very acceptable. Seven species of butterflies were found, namely, *Nathalis iole*, *Colias eurytheme*, *Limenitis weidemeyerii*, *Danaus plexippus*, *Pyraucis huntera*, *Euptoieta claudia*, and *Pamphila nevada*, Scudd., the last species having been identified by Mr. W. H. Edwards. An ichneumon was captured, which Prof. C. V. Riley identifies as *Agama glabrella*, Cr.; it is smaller than the form of that species we get in Custer County. Prof. Riley also identifies an Asiliid fly from this locality as *Ospricerus minor*, which is an addition to my Colorado list. Four Orthoptera were taken, one of them, *Hesperotettix viridis*, Scudd., is a very pretty species, apple-green, with blue stockings and red garters, it was the most abundant of the four. The other three are *Stauronotus elliottii*, Thos.; *Spharagemon æquale*, Scudd.?, and a species of cricket, *Centrophilus pallidus*, Thos., which existed in considerable numbers, and kept up a lively chirping at night. The Coleoptera were also

represented by a few species, *Polyphylla 10-lineata*, Say, of which elytra only were found, *Trirhabda*, sp. indet., *Epicauta maculata*, Say, and *Graptodera foliacea*, which occurred in some numbers on *Cucurbita perennis*, Gray.

Besides the above, there was also a most interesting little colony of insects, supported entirely by the cottonwood-trees (*Populus balsamifera* var. *candicans*), numbering six species. First, a magnificent *Smerinthus*, apparently *S. occidentalis*, Hy. Edw., larger than any of the British species, with beautifully madder-pink hind wings,—this I found at rest on a cotton-wood branch; secondly, a *Catocala*, not unlike the European *nupta*, which I saw but failed to catch, and also found the empty pupa-shells, with the usual bloom on them, under the bark of the trees. Then there was a *Cossus* boring in the living trees. I obtained a young larva, and in a dead stump were also borings, which proved to be those of a species of *Sirex* or *Urocerus*. I should never have supposed there was anything else than *Cossus* in that dead stump, were it not that some ichneumons, the like of which I had never seen before (except a single example flying, which I did not catch, but feel sure was the same, by Red Creek, in Custer Co.), with exceedingly long ovopositors, evidently laying their eggs in some larvæ within the stump. So I bottled these great yellow ichneumons, as well as a male I found flying round belonging to the same species, and cut open the stump with an axe, which led to the discovery of the *Urocerus*. Since then I have sent this and the ichneumon to Prof. C. V. Riley, who tells me that the latter is *Thalessa lunator*. Lastly, there were extensive webs of an Arctiid larva on the branches of the cotton-woods, apparently the same species as that which does much damage to *Populus angustifolia* in the Hardscrabble district of Custer Co., and was observed in Pleasant Valley, Fremont Co. The larvæ resemble in many ways those of *Hyphantria cunea*, which is reckoned so great a pest in the Eastern states, but I sent specimens to Prof. Riley in spirit, and he could not identify them.

The next camp was some twelve miles away, also in Pueblo Co., and at a higher elevation, whence we could see the open prairie stretching out to a level horizon in the east, and looking like the sea. Some dark vegetation marked the course of the Arkansas river, and on it, some thirty miles away, lay the

great town of Pueblo, smoky by day, and bright with the lights of furnaces by night. We camped under some pine trees, and close to the edge of a most interesting cañon, called Wales Cañon, which had steep, sloping sides, going down to a considerable depth, with an open space at the bottom, except where there were thickets or aspen (*Populus tremuloïdes*) trees. The sides of this cañon were remarkable for a new variety of oak—*Quercus undulata* var. *cinerio*, v. nov., small, with pale, rough leaves, nearly two inches long, with sinuate margins, and short, stiff teeth (var. *wrightii*, Engelm., is the nearest approach to this, but the leaves are much smaller), which grew together with an almost typical form of the same species, the difference between them being so marked that it was hard to believe that they were not specifically distinct. Yet it is probable that intermediate forms will be found, such is the variability of the scrub oak. In this cañon I met with a variety of insects, and several species of Mollusca, most of which (e.g. *Conulus fulvus*, *Hyalina radiatula*, *Helix pulchella* var. *costata*) were quite identical with British species. I mention these points, because although not entomological in themselves, they are helpful towards a proper understanding of the origin and nature of the insect fauna. Of the Lepidoptera taken about and in Wales Cañon, some yet remain unnamed, but the following may be mentioned: *Nathalis iole*, *Phyciodes camillus*, Edw., *Limenitis weidemeyerii*, and *Danaïs plexippus*. Of Hymenoptera, I observed *Sirex* (or *Urocerus*) *flavicornis*, Fabr. (very like the European *S. gigas*); *Rhodites*, sp., galls observed on rose-bushes; *Chrysis pacifica*, Say, (a brilliant green species); *Polybia*, sp.; *Melissodes*, sp., and a bright green bee of the genus *Agapostemon*. Diptera were represented by numerous unidentified species, and a large grey Asiliid fly, which Prof. Riley informs me is *Proctacanthus milbertii*, Macq.

Among the Hemiptera, I took *Lygæus facetus*, Say (a species I also find commonly in Custer County), *Nabis inscriptus*; *Melagnotus 5-spinosus*; *Tingis*, sp., *Proconia costalis*, Fab. (on which were parasitic red mites, *Scirus*, sp.), and unidentified species of *Proconia*, *Clastoptera*, and *Bythoscopus*; while the Coleoptera found were *Eleodes extricata*, Say; *Hippodamia convergens*, Guér.; *Amara interstitialis*, Dej.; *Carabus tedatus*, Fab.; *Pterostichus herculaneus*, Mann.; *Asida sordida*, Lec.; *Epicauta ferruginea*,

Say; and two Elateridæ which came to the camp-fire, *Anclastes drurii*, Kirby; and *Asaphes memnonius*, Herbst. I should also say, that I found sundry Myriapods in the cañon of the genera, *Julus*, *Lithobius*, and *Geophilus*. From Wales Cañon we drove across some dry country, till we struck the St. Charles River, and got in a valley through which it flows, termed "Mace's Hole." On the way we passed specimens of *Solanum rostratum*, which is the natural food-plant of the Colorado potato-beetle, but never a sign of *Doryphora* (or *Leptinotarsa*, if we are to call it so). There is not very much to say about this district entomologically; we camped near the county boundary, but in Pueblo Co., and there I got a grasshopper, probably *Trimero-tropis vinculata*, Scudd., or a variety of it, and a specimen of *Carabus serratus*, Say, while one of the ladies brought to camp two fine Cetoniids, which were found on a thistle-flower; they prove to be *Euryomia inda*, L. The next morning, just in the last bit of Pueblo Co., I saw a Pierid butterfly, new to me, as we drove along; it was captured, and is now identified by Mr. W. H. Edwards, as *Neophasia menapia*, Feld., and he adds that the larva feeds on the leaves of pine trees (remarkable food for a Pierid), and in Washington Territory and Oregon does much damage by defoliating the trees. The eggs, he says, are laid in rows, touching each other, and placed obliquely on the leaf; so altogether this is a very aberrant species in its earlier stages, not like a *Pieris* at all.

Now we return to the Hardscrabble district in eastern Custer Co. on the journey homewards. By the south fork of the Hardscrabble Creek, the galls of *Rhodites tuberculator*, Riley, are met with. Later, in the Hardscrabble Cañon, we met with a few insects new to the district, *Pyrameis huntera*, *Chrysophanus zeroë*, Bdv., *Bombus rufocinctus*, Cress., and the curious spotted beetle, *Erotylus boisduvalii*, Lac. Then, at Comargo again, a fine Longicorn beetle, *Leptura canadensis*, Oliv., is found; and this ends the list, except for a few species brought home, of which the precise locality was unfortunately not noted down, viz., a *Satyrus*, which Mr. W. H. Edwards tells me is the western form of *S. nephele*, from S. W. Pueblo Co.; and *Pholisora catullus*, Fab., E. Custer Co.; while *Hybius picipes*, Kirb.?; *Aphodius lividus*, Oliv. (new for Colorado); and *Saprinus oregonensis*, Lec., were from the Hardscrabble district in E. Custer

Co. Near Querida, in Western or Central Custer Co., *Corynetes cæruleus* and *Silpha lapponica*, L., were noted on the homeward journey. Several species remain unidentified yet, so that the above account does not even include all the insects taken on this expedition; but it will, I hope, give some idea of the entomological possibilities of an interesting and little-known district. The British entomologist will recognize many familiar genera, and a few familiar species, and I can only say, that it becomes increasingly apparent to me, that the fauna of these mountains is so nearly related to that of Europe, that an intelligent study of the one without the other, from the point of view of geographical distribution, is almost impossible. The origin, and place of origin, of the various palæarctic genera and species, is yet almost entirely wrapped in obscurity; yet I feel confident that when we come to know the fauna of the palæarctic zone as a whole, much will be cleared up, and the way will be opened for many new investigations and theories.

West Cliff, Custer Co., Colorado, October 12th, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

BY J. W. TUTT, F.E.S.

(Continued from p. 272.)

Hydræcia, Gn., *micacea*, Esp.

This is a most variable species, both in colour and size. The ground colour varies from a pale whitish grey and yellowish red, through bright red and purplish red, to deep brown with no trace of the typical red colour. In size, some specimens are almost twice the expanse of others. In the autumn of 1883 I bred some four hundred specimens from roots of dock. Previous to this, I had looked on this as a most constant species, and its variation surprised me much. Guenée seems surprised that Sepp figured two different varieties, one of which (figs. 6 and 7) he says is the ordinary French form, the other of "an ashy green colour" ('Noctuelles,' vol. v., p. 128). I have never seen one with a green tint. This species has a peculiar shining lustre, hence its name. The type is represented by Esper, Pl.

145, fig. 6, which I have described as follows:—"A dull red ground colour, with two single, fuscous, basal lines, dark greyish or fuscous nervures and costa; stigmata the same shade as the ground colour, surrounded by a narrow purplish ring, and this again surrounded by black; between the two basal lines there is a purple shade, and a strong whitish line beyond the reniform is internally margined with blackish, a greenish grey shade at the base of this black line; the outer part of the wing beyond this white line is also grey, with the exception of an apical streak and a bright reddish hind margin. Hind wings grey, with a marginal shade, followed by a dark transverse line and lunule, base reddish." Haworth describes this species under the name of *cypriaca*, as:—"Alis roseis vel subfuscis fusco-strigatis, medio saturationibus." Hübner also figures (224) the species under the same name. Haworth's var. β . would appear to be the same as Esper's duller-coloured type, for he writes:—"alis magis fuscis et fere absque tincturâ roseâ: posticis cinerascentibus lunulâ mediâ strigisque pone medium fuscis" ('Lepidoptera Britannica,' p. 228, No. 197). I have received this form (type) from Sligo and Aberdeen, have frequently captured it near Strood, and have bred it from Greenwich larvæ, although I have none with the greenish* shades mentioned in my description of Esper's figure. I consider the following a summary of the principal phases of variation:—

1. A whitish-grey form, with slight pink tinge = var. *grisea*.
2. A yellowish red form = var. *lutea*.
3. A rosy form (the more common one in Kent) = var. *cypriaca*, Haw.
4. A deep red (tinged with purplish) form = var. *rubida*.
5. A dull red form suffused with fuscous = *micacea* (the type).
6. A brown form = var. *brunnea*.

I cannot help remarking here the superficial resemblance of this last variety to *petasitis*.

α . var. *lutea*, mihi. — The anterior wings of a very pale yellowish-red ground colour, very shiny, the transverse lines also paler than in the type. The hind wings, which are pale yellowish, have faint traces of the lunule and transverse line, but not of the transverse shade noticeable in the darker forms. Some specimens of this form are very small. I have only Greenwich

* I believe this is chiefly due to the artist trying to represent the peculiar shiny lustre of this species.

specimens of this variety, but Mr. Russ occasionally takes it at Sligo.

β. var. *cypriaca*, Haw.—I am uncertain whether Hübner's fig. 224 ought to be referred to this variety, which I would have include all the bright red rosy forms from which it has derived its English name "*rosy rustic*"; I base this opinion on Haworth's description, "*alis roseis, fusco strigatis*," but I believe such forms as are represented by Hübner's figure should be included. These rosy forms are the more general in the South of England, but apparently rare in the North, where the darker and greyer forms are more abundant.

γ. var. *rubida*, mihi.—The anterior wings of a rich red colour, with a tendency to a purplish tinge. The posterior wings strongly marked with a dark lunule, transverse line and shade. I consider this the finest variety of the species, and have never seen specimens except those I have bred from this neighbourhood.

δ. var. *brunnea*, mihi.—An extreme development of var. *rubida* where the dark red is entirely replaced by a deep, shiny, brown colour. The hind wings are very much suffused with fuscous, the ground colour being of a dull grey; the lunule, transverse line and shade being darker than the ground colour. This extreme melanic form is rare in the South; I have only obtained one in this (Greenwich) neighbourhood, but I have received it from Mr. Percy Russ, of Sligo, and Mr. Reid, of Pitcaple. In these localities it seems not uncommon.

ε. var. *grisea*, mihi.—Anterior wings of a pale, shiny, greyish white, the transverse markings having the slightest possible trace of reddish colour; the stigmata very indistinct. The posterior wings greyish white, with a dusky lunule, and transverse line, while some of these grey forms have, and others have not, the ordinary transverse shade. This form is the one more generally obtained in the marshes on the banks of the Medway; I have bred it from Greenwich and have received it from Mr. Percy Russ (Sligo).

Hydræcia, Gn., *nictitans*, L.

[After a great deal of careful study, I have come to the conclusion that we probably have, under the name of *nictitans*, L., two distinct species, one of which I at first thought was the *lucens* of Freyer; but this is not so, the latter being merely a

variety of the former. My opinion has been formed, both from the study of the imagines in their various phases of variation, and the natural conditions of their occurrence. In the absence, however, of any actual proof of their distinctness, I have treated the form that I consider distinct as a local race or variety of *nictitans* under the name of *paludis* in the following notes on the species.

With regard to the superficial differences between *nictitans* and *paludis* I have made the following notes:—*Paludis* is generally larger than *nictitans*, and in its different phases of variation is rarely, if ever, of the red coloration which is common in some shade or other to all the varieties of *nictitans*. The reniform of *paludis* is always more narrow, owing to the absence of the outside line on the inner edge of the reniform, which is present in that of *nictitans*; it is also less strongly marked, and always white or orange, never red. The posterior wings of *paludis* are more ample and more rounded on the hind margin, the anterior wings less arched on the costa. The typical colour of *paludis* is ochreous or ochreous-grey, and its variations in ground colour assume a greenish tint, until its extremes may be described as greenish grey; the typical colour of *nictitans* is red, and its extremes are reddish brown or black. Both are reticulated with faint transverse lines, but *nictitans* is generally more strongly marked in this respect than *paludis*; the faint transverse line parallel to the hind margin of the anterior wings is of a different shape in *paludis* to that of *nictitans*, being more completely hollowed just below its centre.

With regard to the occurrence of these forms in a state of nature, the following facts are very striking:—On the marshes around Rochester, bordering the Medway, *paludis* in all its form of variation occurs. In the woods around Rochester, not a *paludis* is to be found; all are *nictitans*. At Sligo Mr. Percy Russ takes nothing* but *paludis*, some of which are exceedingly beautiful forms. Mr. Harrison, of Barnsley, has sent me for inspection the pick of the Yorkshire forms,—all are *nictitans*, there is no sign of *paludis*. In London *nictitans* is often common, but I have never seen *paludis*. At Shoeburyness most are *paludis*, whilst at Deal both forms occur. I have taken,

* I must modify this statement, as Mr. Russ last month (Oct., 1888) sent me a very strongly-marked specimen of *H. nictitans*, var. *erythrostigma*, with a query as to its being *nictitans* at all, the form, with a red ground colour, being entirely new to him.

at the latter locality, *nictitans* freely from the marram in copulâ. I have as frequently taken *paludis* in copulâ, but never *nictitans* with *paludis*.

In Plate I. the figs. 1—6 are *paludis*; figs. 7—12 are *nictitans*. A comparison of these two rows of figures will, I trust, make the foregoing notes clear.]

The type of this species (*nictitans*) is of a reddish grey colour, with a white reniform and pale yellowish orbicular (Plate I., fig. 7). The Linnæan description, 'Systema Naturæ,' p. 847, is as follows:—"Noctua spirilinguis cristata, alis ferrugineo-griseis, stigmatibus reniformi, niveo pupilla lunari lutea." The variation of this species lies chiefly in depth of ground colour, and colour of the reniform stigma (Plate I., figs. 7-12). The ground colour varies from pale pinkish red through different shades of ferruginous red to almost black. The reniform stigma varies from white, through various shades of orange, to red. Mr. Porritt, in 'The Transactions of the Yorkshire Naturalists' Union,' Part vi., p. 73, writes of the Yorkshire specimens "often very strongly coloured." Hübner figures (221) the type under the name of *chrysographa*.

α. var. *rosea*, mihi.—A pale red form (Plate I., fig. 9), with transverse lines very indistinct; the orange orbicular scarcely noticeable, being but little different to the ground colour; the reniform large and well-defined, white in colour as in the type; the fringes of the hind wings very rosy, a distinct red line bordering the hind wings, the red shade extending some distance within the outer margin. The form is rare and apparently northern. I have never seen it in the south. Mr. Harrison captures it at Barnsley, and Mr. Lawson has sent me specimens from Perth. Fig. 9 is taken from a specimen captured by Mr. Lawson at Perth.

β. var. *erythrostigma*, Haw.—Haworth's description of this variety (which he treated as a distinct species) is as follows:—"Alis griseo rufescentibus, strigis variis tenuissimis saturatioribus, stigmatibus rotundo reniformique rufis." "Alæ posticæ subfuscae ciliis rufescentibus. Stigma subinde fere oblitteratum est" ('Lepidoptera Britannica,' p. 240). This variety is of the same colour as the type, but the reniform stigma is red instead of white (Plate I., fig. 10). It occurs everywhere with the type. I have specimens from Rannoch and other Scotch localities, which differ in no way from others captured in London, Deal, and other southern localities. It is figured in Newman's 'British

Moths,' p. 280, and some remarks of Newman on this variety are on the following page of the same work. Guenée says of it:—"Does not differ from ordinary specimens, except that the reniform is reddish instead of white" ('Noctuelles,' vol. v., p. 126). The specimen from which fig. 10 was taken was captured at Deal.

γ. var. *auricula*, Haw.—Also treated by Haworth as a distinct species. His description ('Lepidoptera Britannica,' p. 240) is as follows:—"Alis fusco-ferrugineis obsolete auratis fusco strigatis, stigmatibus reniformi albo-aureo." Haworth undoubtedly treated this as distinct, because of the golden colour of the reniform. He says, "From its reniform stigma being of the colour of pure gold, it has obtained appropriately enough, the appellation of the 'golden ear.'" This variety is intermediate between the type with white, and var. *erythrostigma* with red, reniform stigma. The specimen from which this variety, fig. 11, was taken, was captured at Deal.

δ. var. *obscura*, mihi.—The ground colour of a very dark (inclining to blackish) brown colour, with very little trace of the ferruginous colour of the type; the reniform stigma is white as in the type. I have never seen the orange or red reniform in this variety. Hind wings darker than in the type, fringes paler. This melanic form occurs but rarely. I have only taken it occasionally at Deal. This variety is figured, Plate I., fig. 12, from a specimen captured at Deal.

ε. var. *pallida*, mihi.—The ground colour of the anterior wings of a pale yellowish or greyish red colour. All the lines and markings very distinct. Both stigmata are generally yellowish, but sometimes the reniform is whitish, sometimes orange. The posterior wings paler than in the type. Guenée's var. B., 'Noctuelles,' vol. v., p. 126, would appear to be this variety. His description is, "Anterior wings a little more pointed at the apex, of a very pale, rosy, yellowish colour, which makes the lines more distinct. Locality, North America." The specimen from which this variety was figured (fig. 8) was captured at Deal.

ζ. var. *lucens*, Frr.—*Lucens* is treated as a distinct species by Freyer and Herrich-Schäffer, but treated as a variety of *nictitans* by Guenée. In this he is followed by Newman (Newman's 'British Moths,' p. 281), and Staudinger, in his 'Catalogue,' adopts the same view. Dr. Staudinger says of it (comparing it with *nictitans*), "major, mac. renif. alba aut rufa." There is no

doubt that these are simply large *nictitans*. I find also that in the Doubleday collection, a number of large *nictitans*, which differ in no way (except size) from ordinary *nictitans*, are labelled as *lucens*. Careful study of Freyer's figures, pl. 468, figs 3, 4, and Herrich-Schæffer's, figs. 285—288 (by error 85—88), shows that their types are really *nictitans* and not distinct. I have made the following notes of Freyer's figures:—"Fig. 3. ♀. Anterior wings reddish ochreous, with two red stigmata; a dark shade passing from the costa, between the stigmata, to the inner margin; a double abbreviated black line at the base, followed by three very fine black lines before the orbicular; two fine black lines just beyond the reniform, with a slaty grey band at some distance from, but parallel to, the hind margin." "Fig. 4. ♀. Strong red *nictitans*, with white reniform." Of Herrich-Schæffer's figures I noted:—"Strongly-marked *nictitans*, colour of reniform variable." All these figures are strongly reticulated.

[Before describing the next variety (*paludis*) I would make the following remarks:—For reasons that I have just given under my notes on *nicticans*, I am almost satisfied that this is a species distinct from, but closely allied to, *nictitans*. Its different phases of variation are shown on Plate I., figs. 1—6. The varieties of this local race or species (whichever it may be) vary in colour from yellow-ochreous to brownish ochreous and grey, with a slight greenish tinge. The orbicular is yellow in all varieties, the reniform is always white- or orange-yellow, never distinctly red as in *nictitans* var. *erythrostigma*. The form is not figured by any British or Continental author; as far as I can find, the nearest approach to it is Esper's, fig. v., pl. 125; although in Humphrey & Westwood's 'British Moths,' vol. ii., pl. xxxvii., fig. 4, there is a poor figure of what might possibly be its var. *grisea*. *Paludis* and its vars. seem particularly marsh or coast-forms. The palest I have ever seen were captured by Mr. Russ, at Sligo, in Ireland; but some captured by Mr. Ovenden and myself at Strood, some by Mr. Coverdale at Shoburyness, and some by myself at Deal, are but little darker than the Irish specimens. In Plate I., figs. 1 & 2 are the ochreous form (*paludis*); figs. 4, 5, 6, are the dark form (*grisea*); fig. 3 is intermediate (*intermedia*). It must be noted that each of these figures has a form with both white and yellow reniform stigmata, although a yellow form of *intermedia* is not figured. I have therefore divided each of the

three varieties up into *-albo* and *-flavo* according to the colour of the reniform.]

n. var. paludis, mihi.—(1) *paludis-albo*.—The anterior wing of a pale ochreous-yellow ground colour, with a white reniform and yellow orbicular; an abbreviated double basal line, followed by two single fuscous transverse lines; a dark fuscous shade, extending from the inner edge of the reniform to the inner margin; two fuscous transverse elbowed lines just beyond the reniform, extending across the wing; a costal shade slightly darker than the ground colour near the apex, the reniform being situated in a similarly-coloured shade; the hind margin from the apex to the anal angle also darker; the reniform is exceedingly narrow, compared with that of *nictitans*, owing to the absence of the outside ring present in the reniform of the latter species. The hind wings dark grey, the males with the base much paler, darker nervures and indistinct lunule. This variety is figured on Plate I., fig. 1. I have specimens from Sligo, Strood, and Deal.

(2). *paludis-flavo*.—Figured on Plate I., fig. 2, like *paludis-albo*, but with a yellow reniform instead of white. I have specimens from Sligo, Strood, Shoeburyness, and Deal.

θ. var. intermedia, mihi.—(1) *intermedia-albo*.—This variety has the ground colour darker ochreous than in *var. paludis*, a more distinct dark shade around the reniform, and the ground colour with a slight greenish tint. This variety is figured on Plate I., fig. 3. I have specimens of this *var.* and *intermedia-flavo*, from Shoeburyness, Sligo, Strood, and Deal.

(2). *intermedia-flavo*.—Like the above *intermedia-albo*, but with a yellow reniform instead of white.

κ. var. grisea, mihi.—(1). *grisea-albo*.—The ground colour greyish, darker than *paludis* and *intermedia*, with a slight greenish tinge, a pale yellow orbicular and a white reniform, a darker shade enveloping the lower part of the reniform. The pale transverse lines as in *paludis* and *intermedia*. The posterior wings darker than in either of these last two varieties. This form is figured on Plate I., fig. 4, and I have specimens from Deal and Strood. This and the following are more common in Kent than either *var. paludis* or *var. intermedia*.

(2). *grisea-flavo*.—Like *grisea-albo*, but with yellow reniform stigmata instead of white. This form is figured on Plate I., figs. 6 & 7, the latter of these two figures having the transverse lines

especially strongly marked. My specimens came from Strood and Deal.

(To be continued.)

EXPLANATION OF PLATE I.

Fig. 1.	<i>paludis</i> (<i>paludis-albo</i>)	.	.	Captured at Deal, Aug., 1887.
„ 2.	<i>paludis</i> (<i>paludis-flavo</i>)	.	.	Captured at Shoeburyness, „ 1883.
„ 3.	<i>intermedia</i> (<i>intermedia-albo</i>)	„	Deal	„ 1887.
„ 4.	<i>grisea</i> (<i>grisea-albo</i>)	.	„ Deal	„ „
„ 5.	<i>grisea</i> (<i>grisea-flavo</i>)	.	„ Strood	„ 1884.
„ 6.	<i>grisea</i> (<i>grisea-flavo</i>)	.	„ Deal	„ 1887.
„ 7.	<i>nictitans</i> , L.	.	„ Deal	„ „
„ 8.	„ <i>v. pallida</i>	.	„ Deal	„ „
„ 9.	„ <i>v. rosea</i>	.	„ Perth	„ „
„ 10.	„ <i>v. erythrostigma</i> , Haw.	„	„ Deal	„ „
„ 11.	„ <i>v. auricula</i> , Haw.	.	„ Deal	„ „
„ 12.	„ <i>v. obscura</i>	.	„ Deal	„ „

NOTES FROM THE NORTH-WEST COUNTIES.

By J. ARKLE.

UP to the beginning of March frost and snow made collecting impossible. I occasionally saw *Chimatomia brumata* and *Hybernia defoliaria* on the gas-lamps; but it was not till the 10th of March that I made the acquaintance of *Nyssia hispidaria*, in Delamere Forest. This moth was a very common insect in that locality until the end of the month—with, of course, *H. rupicaprararia*, *H. leucophearia*, *H. marginaria*, *Anisopteryx æscularia*, *Larentia multistrigaria*, *Phigalia pedaria* and, occasionally, *Cymatophora* or and *Amphidasys strataria*. A good rain, the first with us for months, occurred on April 12th, and was succeeded by a few days of warmth. On April 17th I came across the common *Teniocampa* representatives with *T. gracilis* and *T. incerta*—all in profusion on the sallow-blooms at night.

The succeeding cold left me nothing to record until May 2nd, when a few *Tephrosia biundularia* (*laricaria*) emerged—bred from Delamere Forest larvæ which I had beaten off birch last autumn. On the 5th larvæ of *Liparis similis* (*auriflua*)—which

had hybernated in little webs accommodating one as a rule, but sometimes two—emerged, and began eating the early buds of the hawthorn. My first visit of the season to the Wallasey sandhills occurred on May 12th. This locality, as your readers are doubtless aware, is famous as the habitat of *Nyssia zonaria*. For several years past it has not been a common insect there, and, on the occasion of the visit referred to, I considered myself fortunate in taking a fine male and female—bringing the recorded captures of the season, for the time, up to no more than eight. The male was at rest on a catkin of the dwarf willows which clothe many a hollow and crest of the sandhills; the female was busy laying her eggs on a dead ragwort stem. These eggs, I am sorry to say, proved infertile. Fresh and numerous specimens of *Mesotype virgata*—a moth with very butterfly-like habits—skipped among the short herbage; but my chief object was the capture of *Tæniocampa opima*. Finding the dwarf sallows so well in bloom, I decided to hire a lantern, and indulge in a lonely examination of the catkins after night-fall. Whilst on my way to the village, however, I had the good fortune to meet with a local entomologist. This gentleman most kindly put me on the right track for *Tæniocampa opima*. The insect, he said, was most probably over,—at any rate the sallows, from their very abundance, were not worth working. Eggs, however, were doubtless to be had near a certain part of the coast-line, and thither I was kindly conducted. No one would expect them on the dead stems of ragwort, and far away from the sallows; but there they were, in batches of a dull brown colour, which showed they had been deposited some time, as they are white when freshly laid. The parent moth can then be discovered at the root of the plant. A batch or two satisfied me, especially as the larvæ are considered to be difficult to rear. However, I lost only a small percentage of the caterpillars after hatching, and I have every reason to hope that the remainder pupated well. The dead ones succumbed to a flabby, dropsical-looking state, which attacked them on entering their last stage. A few captures of the lovely *Nomophila ostrinalis* and a good beetle—*Cicindela hybrida*—closed a most interesting day.

Whitsuntide found me in the charming Vale of Llangollen. On the opposite hillside, whilst standing under the ruins of Abbey Crucis, I could look into the birch-wood where *Sesia*

scoliiformis used to be taken, but something like thirty years ago. The only insect I saw worth a special record was *Euchloë cardamines*, which literally swarmed over the meadows in the Vale.

The first half of June was notorious in the Chester district for a profusion of *Vanessa cardui*—certainly a remarkably late month for a hibernated butterfly to appear! The insect was taken several times, even in our street gardens; and I set a few for the purpose of a comparison to which I will refer by-and-bye. Lepidopterous larvæ of most species have been abundant with us this summer. In Delamere Forest the oaks were almost defoliated, chiefly by the caterpillars of *Tortrix viridana*. I would also specially include, from their abundance, those of *Calymnia trapezina*. Two or three got accidentally into my larva-boxes, and they devoured, to my chagrin, nearly every other occupant. Larvæ of *Hylophila prasinana* were also very common. From last year's larvæ, beaten in Delamere Forest, I might incidentally say that I had, up to this date, the emergence of *Tephrosia biundularia*, *Hadena glauca*, *Acronycta leporina*, *Cymatophora duplaris*, and many commoner species.

A visit to Delamere Forest on June 23rd showed that, in addition to *Pieris brassicæ*, *P. napi*, *Cænonympha pamphilus*, *Polyommatus phlæas* and *Lycæna icarus*, *Thecla rubi* was also a common insect, in fact, unusually so. Others, equally common, were *Bupalus piniaria*, *Ematurga atomaria*, *Lomaspilis marginata*, *Cubera pusaria*, *Macaria liturata*, *Hypsipetes ruberata*, *Cidaria corylata*, *Thera variata*, but by no means so abundant as last year. Old acquaintances like *Aplecta nebulosa*, *Hepialus hectus*, and *H. velleda*, seemed conspicuous by their absence; while, on the other hand, *Panagria petraria*, *Eubolia plumbaria*, and *Cymatophora duplaris* appeared like fresh discoveries. In comparison with last season, however, this fine hunting-ground seemed deserted by the insect tribes. *Ellopiæ prosapiaria* I only met with twice; *Eucosmia undulata* and *Geometra papilionaria* not at all: whilst the scanty occurrence of *Anarta myrtili*, *Nemophila russula* and *Boarmia repandata* was delayed, doubtless by the cold of June and the addition of rain in July, until the middle of the last-named month. The tardy appearance of *Lycæna ægon* and *Drepana falcataria* did not take place till then, but was atoned for by the unusual abundance of both insects.

Amongst the beetles I must specially mention *Elater balteatus*, beaten commonly enough out of birch. I should not pass over my Delamere visit on the 23rd, without referring to what has evidently been considered a matter of some importance. I came across a type female *Amphidasys betularia* and black male, on an oak trunk, and *in copulâ*. The female I kept alive for eggs, and these hatched.

On July 16th I was at Southport, famous entomologically for its fine sandhills. I record the visit, as it was the first time I ever saw larvæ of *Leucoma salicis* in the wild state. They were plentiful in the streets,—on the poplars screening the houses and gardens from the road. I took two or three fine specimens of *Acronycta megacephala* from the poplar trunks that were within reach.

The weather for the summer seemed now thoroughly disorganized, and no expedition could be indulged in without the attendant nuisances of waterproof or umbrella. With the consolation, however, that matters could not well be worse, I started for the North Lancashire mosses on July 19th, and met there Mr. A. W. Kershaw, of Lancaster, and Mr. H. Murray, of Carnforth,—old entomological friends. Our first hunt took place on Heysham Moss, near Morecambe, on the 20th, *Carsia paludata* (*imbutata*) being the insect perhaps most desired. I was sorry to see that the Moss had become less in extent since my last visit two years ago. It was too early for *C. paludata*, but the short interval of sunshine we were favoured with brought out hundreds of *Hyria muricata* (*auro-raria*), of which I secured a good series. *Cænonympha typhon* seemed as plentiful as ever. *Anarta myrtilli* was a common insect and comparatively easy to capture, owing to the low temperature; but a drenching rain put a stop to further operations. On July 23rd we reached the Witherslack Mosses. Making the best of a threatening morning, our captures were *Argynnīs selene*, *Syrichthus malvæ* (*alveolus*), *Lycena astrarche* var. *salmacis*, *Pseudoterpna pruinata* (*cytisaria*), *Hyria muricata* (rare), *Drepana lacertinaria* and *Melanthia ocellata*, beaten from birch, *Nemeophila russula*, *Peronea rufana*, with larvæ of *Notodonta ziczac* and *Gonoptera libatrix* taken from the willows. *Vanessa io* larvæ were in great abundance on the nettles. The mosses resembled sponges filled with water, and were impassable in many places

as we learned to our cost. Vipers were also common impediments, and lizards swarmed in drier places. After midday the rain came down and drove us into our hotel,—the ‘Derby Arms,’—wet through, where we met the well-known Lancashire entomologist, Mr. Hodgkinson, with whom we chatted on things entomological till far into the afternoon. The day ended with Mr. Murray showing us, at Carnforth, a magnificent *Cidaria reticulata*, which had just developed in one of his breeding-cages. The 27th saw us once more at Heysham Moss. *C. paludata* was just beginning to make its appearance, and we took two fine specimens. *H. muricata* had nearly disappeared, only two being seen, and the weather had evidently thinned the numbers of *C. typhon*. Beating a retreat before a downfall of rain, we turned our attention to larva-hunting in the rides or approaches to the Moss. Growing out of the wide ditches, on either side, were numberless bulrushes, in the stems of which the larvæ of *Nonagria arundinis* (*typhæ*), nearly full fed, were in any quantity. On the thistles we secured a large number of the larvæ of *Vanessa cardui*, whilst the nettles were equally tenanted by the caterpillars of *V. atalanta* and *V. urticæ*. The butterflies I bred from the *V. cardui* larvæ presented a very different appearance to the hybernated specimens already referred to. They are decidedly darker, having much more black upon their wings. One pupa, out of the dozen or so I retained, has not yet developed into the perfect insect. It is quite healthy, and looks as if it will pass the winter in the pupal state. The stone walls of the district are notorious for the profusion of *Bryophila perla*. Hearing that the Lancaster insect is claimed in certain quarters as a variety, I secured a long series for comparison. The distinctive value of the specimens, however, is evidently *nil*. A black *Apamea didyma*, taken at rest in the streets, closes my Lancashire record.

On July 20th I went to Hoylake, a small town on the Cheshire coast-line, and only a few miles from Wallasey. Here *L. salicis* was too evidently a garden pest. The leaves of willows and poplars bordering the streets were matted together by the cocoons, which were often common to three or more pupæ; and numbers of the moths were lazily resting on the leaves and branches, depositing their eggs. Larvæ of *Smerinthus ocellatus*, *S. populi* and *A. megacephala* were common.

On August 4th I took another trip into North Wales. My object was to extend what knowledge I possess respecting the haunts of *Agrotis ashworthii*, an insect which is still to be had, I am told, but by a very limited number of entomologists, among whom, I am sorry to say, I cannot at present rank myself. Mr. Alfred O. Walker gives both Llangollen and 'The Loggerheads' as localities; and both districts are certainly well-known to me. 'The Loggerheads,' which is simply a quiet and comfortable country inn, is reached by walking along a dry water-way cut in the face of limestone precipices, four or five miles from the hamlet of Rhydymwyn, on the Chester and Denbigh Railway. The scenery is among the finest in North Wales, and all along the entomologist finds a splendid, if dangerous, hunting-ground. On this occasion my captures, owing to the miserable weather, were few:—*Lycæna astrarche*, late, and just appearing; *P. pruinata*, *Anaitis plagiata*, *Cidaria truncata* var. *perfuscata*, *Mimæscopeptilus pterodaetylus*. *Satyrus semele*, an abundant butterfly here, was evidently still in the chrysalis; and the fresh bloom on the dog-roses gave additional hints on the lateness of the season. I might well, therefore, have spared myself the search, on the face of an ugly-looking cliff, for *A. ashworthii*,—at any rate I gave it up, for an intended larva-hunt some night next spring, as rain began to fall. I may add that I came across many cocoons of *Plusia gamma*—a moth which has swarmed with us—a curious coincidence to the season's abundance of *V. cardui*. Cold weather, rain, and very little sunshine, marked the greater part of August. The common but brilliant tiger-beetle, *Cicindela campestris*, was abundant in the first week, on the heaths at Delamere. The effect of the unseasonable weather was shown by my taking two fine *Geometra papilionaria* from a Chester gas-lamp, on August 6th. From another gas-lamp I took *Cosmia pyralina* on the 10th. On the 25th I was fortunate in obtaining larvæ of *Notodonta dictæoides* from sallows growing in the Chester Cemetery. The 8th and 13th of September are red-letter days marked as visits to Wallasey, and with the captures of *Deilephila galii* larvæ. *Anomala frischii* was a fairly common beetle on both occasions.

Sharp and unusual frost set in on the 25th of September. Previous to that date I ought to note a capture of *Cirrhædia*

xerampelina on the 12th and another on the 15th, both at gas-lamps. On the 17th a young friend brought me a full-fed caterpillar of *Acronycta alni*, which he had taken from a hawthorn hedge in the suburbs of the city. I gave it two or three inches of dead, dry thistle-stem, and it soon disappeared as it excavated its pupal-chamber amongst the pith.

2, George Street, Chester.

NOTE ON *TORTRIX PICEANA*, LINN.

By RICHARD SOUTH, F.E.S.

MR. CAPPER's interesting note (Entom. 279) on the occurrence of *T. piceana* in the New Forest induces me to communicate my experience with this insect in Surrey.

During the last four years I have at odd times most successfully worked the Surrey pine-woods and plantations, securing therein many good species of Micro-Lepidoptera peculiar to the Coniferæ. Among others were *Sericoris bifasciana*, *Pædisca ratzeburghiana*, and *P. rubiginosana*, but the prize was undoubtedly *T. piceana*, of which species I first netted a wasted male example early in August, 1884. The following year (1885), whilst collecting larvæ of *S. bifasciana*, I noticed some needles of the Scotch fir spun together; and suspecting this was the work of a lepidopterous larva, I proceeded to overhaul the construction, with a view of making the acquaintance of the architect and owner. In this, however, I only partially succeeded, for as I gently knocked at the front door of the leafy tenement the occupant bustled out at the back, and I had but a momentary glimpse of a green, plump Tortrix larva. For the remainder of that afternoon my interest was transferred from *S. bifasciana*, and I put all my energy into the discovery of what might be aptly termed "needle-cases," for the enterprise was hardly more satisfactory than that of looking for the proverbial "needle in a bottle of hay." Although I worked with a will, searching and beating for fully three hours, I only obtained eight larvæ, from which I subsequently bred one imago of *T. piceana*. What became of the other seven larvæ I never knew, but probably they made their escape through a small hole in the muslin which covered the top of the flower-pot in which I had placed them, and which

I had failed to detect until too late. In 1886 I got but one larva, which produced a female specimen in July, and the following year I failed to get any. Unfortunately I did not visit the ground at the right time for the imago in either of those years, but this year I obtained one imago in June. My first example of *T. piceana* was captured on the wing as it flew about the lower branches of a tall pine-tree, and at the same time there were a number of small moths flying high up and around one spot of this particular tree. As well as I could judge these were similar in size and shape, and appeared to fly in the same manner as the specimen I captured, and I thought they were most likely *T. piceana* also; but no other specimens came within my reach, so that I was unable to verify my supposition.

I remember once to have seen males of *T. podana* crowding around and about the herbage in a hedgerow, under an oak tree. On investigating the cause of this assemblage I found that the attraction was a lady *podana*; so that if any entomologist should find larvæ of *T. piceana*, and breed a female of that species, it might be well to test her power of attracting the opposite sex. Probably it will be found that the larvæ of this Tortrix feeds, as a rule, higher up the tree than is convenient for work by the ordinary methods of searching and beating, and it occurs to me that "sheeting" and "jarring" might be employed with advantage. "Verbum sat sapienti."

When Mr. Wilkinson wrote his 'British Tortrices' (pub. 1859) the claim of *T. piceana* to a place in our list rested on somewhat slender data; and the author of the work referred to did not describe the species, as he seems to have considered that at the time there was some doubt as to the authenticity of the occurrence of the species in Britain. After describing the ten species placed by him in Stephens' genus *Lozotania*, Wilkinson appends a note which it may be interesting to reprint here:—"Note.—Besides the foregoing ten species, there is another (*T. piceana*), of which a single specimen, a female, is said to have occurred in this country at the New Forest many years ago; it was originally in the possession of Mr. Stone, from whom it passed into the collection of Mr. Bently, and ultimately to that of Mr. Edwin Shepherd, where it now is at present unique; but as its claims to rank as an indigenous species must be received with doubt, it is merely mentioned here provisionally, lest hereafter it be

admitted to our list. Upon the Continent it is a well-known species, and inhabits the pine-forests of Germany, Sweden, &c., and in size and appearance much resembles *L. fulvana*" (*podana*).

In Ent. Mo. Mag. viii., p. 272, Mr. C. G. Barrett says that he beat a female specimen of *T. picana* from an oak-tree in a wood on the borders of Hants. This capture was effected on July 11th, 1868, but it was long after that date that he ascertained the insect was not "an extraordinary variety of *T. pyrastrana*" (*podana*) as he supposed it, but *T. picana*. Any one with suspicious-looking specimens in their series of *T. podana*, should therefore subject the same to a critical examination.

12, Abbey Gardens, St. John's Wood, N.W.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN SUSSEX.—On the 14th of September, 1887, I captured a large brown butterfly. All the wings were of a rich chestnut-brown, with broad blackish brown borders, studded with a double row of white spots; in expanse they were about six inches. It was flying along the beach at Worthing, and a friend who was with me at the time managed to hit it down with his cap, when I caught it. It was uninjured, and seemed to be freshly emerged. I saw another the next day but was unable to capture it. I was ignorant of its name till a few days ago, when I saw one like it in a museum, and was so enabled to identify them.—F. H. STEWART; Oaklands, Eccles, Lancashire, Oct. 4.

DEILEPHILA GALII IN LANCASHIRE.—On July 22nd last, towards noon, I caught a fine specimen of *D. galii* here. It was flying up and down the skylight of a "Fives" Court, trying to find an outlet, appearing much distressed by the hot sun.—R. AUGUSTINE CLARKE; Rossall School, Fleetwood, Lancashire, Nov. 10, 1888.

DEILEPHILA GALII IN BERKS.—On September 10th, I found some caterpillars of *Deilephila galii* feeding on *Clarkia* in a garden here. They were then not quite half-grown, and became full-fed on 25th September, when they spun a slight cocoon on the surface of the earth in the breeding-cage, changing to chrysalis. I never heard of its being found so far inland before.—W. BARNES; 2, Brightwell Villas, Southern Hill, Reading, Nov. 5.

SESIA MYOPÆFORMIS IN THE ISLE OF THANET.—My brother, S. C. Cockerell, has recently sent me an example of this species, which he found at Minster in the Isle of Thanet. Although in many places a common insect, I am not aware of any previous record for Thanet. Conchologically, Thanet is found to present peculiarities, not only in the presence, but more notably often in the absence, of certain species. Mr. T. Wood's notes, from time to time, show us that it has some interesting Coleoptera, and several rare Lepidoptera are occasionally found there; while Mr. Billups has collected some good Hymenoptera and Hemiptera. Would it, therefore, be too much to ask some ardent entomologist to spend a few days' holiday there when he can, and collect material to be published as a beginning of a complete list of the insect-fauna of this corner of England? At present the records are few, and so scattered, that it would take a couple of months in the British Museum library to make sure of finding them all.—T. D. A. COCKERELL; August 20, 1888.

LITHOSIA COMPLANA, FOOD OF LARVÆ.—Whilst collecting on sand-hills on the Carmarthenshire coast, on July 31st, I captured a specimen of *Lithosia complana*. Was not this an uncommon situation? There were no bushes or trees of any kind within half-a-mile at least. On what lichens does the larva feed? Newman, in 'British Moths,' questions the larvæ having been seen in this country. Have they since been discovered? I should state that the specimen taken was perfectly fresh and in fine condition.—T. B. JEFFERYS; Cirencester, August 18, 1888.

OCNERIA DISPAR, MALFORMED.—I see that one of your correspondents (Entom. 235), in breeding *Ocneria dispar*, has had all his female specimens emerge in a crippled condition. I have bred about twenty, and have only had one which was fit to set, all the others being deformed; some of them almost wingless. From these I have obtained a lot of ova, to see if this malformation is continued. A friend, also having a lot of this pupa, has only bred two perfect females; while our male examples were, without exception, all perfect.—W. T. RAINE; 333, Ladypool Road, Sparkbrook, Birmingham.

ACIDALIA IMMORATA AT LEWES.—I am pleased to report that this insect has again been taken in the same locality as last year, thus confirming it as an undoubted British species, and not a casual visitor. It is readily disturbed from the herbage by day,

and apparently does not fly at dusk. Its habits are therefore not very much those of an *Acidalia*. Indeed in appearance and habits it seems closely allied to *Strenia*, in which genus Berce ('Faune Entomologique Française') places it.—J. H. A. JENNER; 4, East Street, Lewes, October 24, 1888.

SIREX GIGAS NEAR ENFIELD.—Late in July, 1887, a friend of mine netted a splendid specimen of *Sirex gigas*, which was flying about in a garden here. The insect is now in my possession. It may have come from a timber-yard close by.—H. D. SYKES; The Cedars, Brigadier Hill, Enfield, Middlesex, Oct. 22.

VARIOUS CAPTURES.—My captures during the past season, besides a fair quantity of Lepidoptera, include in Coleoptera, *Typhæus vulgaris*, Coldharbour Common, Surrey; *Attelabus curculionides*, Epping Forest, near Loughton; *Liophlæus nubilus*, *Mycetophagus 4-pustulatus*, *Crecophilus macillosus*, *Leistrophus nebulosus*, *L. murinus*, *Onthophagus vacca*, near Stamford Hill, the three last very plentifully. *Hylobius abietis*, taken at sugar, Brockenhurst, New Forest; *Liopus nebulosus*, beaten from sallow, Chattenden Woods; *Dorcus parallelipedus*, *Prionus coriarius*, *Necrophorus vespillo*, *N. interruptus*, *N. ruspator*, *N. humator*, sent to me from Wellington, Somerset; the two last, with other commoner species, were found under a dead hedgehog. Among Orthoptera: *Micropteryx cinereus*, *Odontura punctatissima*, in Chattenden Woods, near Strood; *Ectobius lapponica*, taken at sugar, Brockenhurst, Hants. Among Homoptera: *Ledra aurita*, near Cobham, Surrey, Chattenden Woods, and Epping Forest, near Loughton; *Centrotus cornutus*, same locality as the last. Among Hemiptera: *Naucoris cimicoides*, several, Stamford Hill; *Ranatra linearis*, Epping Forest, Snarebrook. Among Trichoptera: *Raphidia londinensis*, beaten from a hedge in a lane between Potter's Bar and the Railway station. Among Hymenoptera: *Trichiosoma lucorum*, near Cobham, Surrey; *Abia nigricornis*, Holmwood Common, Surrey; *Lampronata setosa*, several females around a *Cossus*-infected tree, Stamford Hill; *Sirex gigas*, sent to me from Wellington. Among Diptera: *Tipula gigantea*, Stamford Hill; *Bombylius major*, Holmwood Common; *Volucella bombylans*, Chattenden Woods; *Tachina ferox*, *Atylotus fulvus*, *Chrysops relictus*, from Wellington; *Eristalis intricatus*, Stamford Hill.—F. MILTON; 164, Stamford Hill, N., October 22, 1888.

LEPIDOPTERA IN SURREY.—My captures from May to July include—May 14th: *Cucullia chamomillæ*, found at rest on a fence in Dorking. 21st: *Stigmonota perlepidana*, common near Gomshall. 31st: *Phorodesma pustulata*, Ranmore. June 3rd: *Nemeobius lucina* (commonly), *Gnophria rubricollis*, at Ranmore. 7th: *Emmelesia decolorata*, on Box Hill. 10th: *Thecla rubi*, at Ranmore. 17th: A large number of larvæ of *Thecla quercus*, nearly everyone of which produced an imago; several larvæ of *Cymatophora ridens*, as well as larvæ of *Cerostoma costella*, *Psilura monacha*, Ranmore. 24th: *Acidalia ornata*, abundantly; a pair of *Carabus violaceum*, near Dorking. July 8th: *Lycæna minima*, quite common on the down near the rifle-range at Reigate, where *Setina irrorella* is rather common. 10th: *Thyatira batis*, very common at Ranmore; but not a single *T. derasa* seen.—F. G. WHITTLE; 2, Cambridge Terrace, Lupus Street, S.W., October 21, 1888.

NOTES FROM THE CHANNEL ISLANDS.—I spent part of my holiday this year amongst the Channel Islands, arriving at Guernsey about the 19th of August. Although I did not go fully prepared for collecting, still I managed to pick up a few insects. The weather on the whole was very fine and hot, although one or two days were showery. I noticed most of the common butterflies in Guernsey, including a few *Argynnis paphia*. *Satyrus semele* was abundant on the cliffs round Fort George, and *Bombyx quercus* was seen in great plenty at the same spot, dashing about wildly in the sunshine. I noticed one example of *Colias edusa* flying amongst the shipping in the docks. At Sark, where I spent a single day, butterflies appeared to be anything but numerous; nor was I surprised considering what a bleak and barren island it is. *Vanessa atalanta*, *S. semele*, *Gonepteryx rhamni*, and *Pieris brassicæ*, were all I saw; but the larvæ of *Euchelia jacobææ* were swarming on almost every piece of ragwort that I passed. While at Jersey the weather was splendid, and many kinds of butterflies were to be noticed in great numbers. As I was driving along, I saw a very large *C. edusa* in a grass field, and soon afterwards caught sight of *Callimorpha hera* flying in the sunshine. The beautiful moth settled on a hawthorn bush, and having jumped out of the carriage I secured it safely. Taking into consideration the great variety of country in this island, it

should be an excellent locality for Lepidoptera.—W. H. BLABER; Sunnyside, Groombridge, Sussex, October 9, 1888.

HIGH FLAT-SETTING.—A great deal has been said lately on the advantage of continental setting for insects, but nobody seems to have pointed out any disadvantages. It was proposed that those who had not completed their collections, should re-set them. Now, I have not re-set my collection from the English style to that of the continental, but I have re-set it from the continental to the English. Although by no means a large collection, it entailed, I believe, about three weeks' labour; and of the insects re-set, I have had to renew a large number. If, when this was done again, there was any definite result to be gained, one would not mind the trouble; but having re-set our collections to say one half-inch for Noctuæ, we find on exchanging with some correspondent, that he has re-set his Noctuæ to one inch; remarkably pretty a series of insects look, say with four of them, on heights varying from one inch and a quarter to half an inch, as I have seen them on the continent! Would it not be possible to have a regulation board given out by the Entomological Society, if they would spare a short time to the consideration of a want that is evidently felt, judging by the recent letters to the 'Entomologist?' I for one, as an outsider, would be extremely grateful. Till, however, there is some chance of uniformity, I prefer to keep my modest little collection in the English style, where the vagaries of setting are not so noticeable. As to mites, they attack insects set in continental style, where no counter-poison is kept, just as they do in England, with the exception, that as they cannot climb up the pin, they go on the top of the case and drop down. I have found a drawer full of them, even where mercury was kept.—K. DINGWALL; Knollys Croft, Streatham.

BRITISH DIPTERA.—I see in your review of 'A List of British Diptera' (Entom. 287), it is said, "placing the *Æstridæ* between the *Conopidæ* and *Tachinidæ* is a novelty which requires testing." In arranging my Diptera five years ago I placed the family in that exact position, without any communication with Mr. Verrall on the subject; so, if wrong, it is singular we both arrived at the same conclusion. I have not yet seen the list, so am curious to know where the *Platypezidæ* are placed. In my opinion they are closely allied to the *Anthomyidæ*. Living specimens in the net much resemble each other.—C. W. DALE.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—November 7th, 1888. Dr. D. Sharp, F.L.S., President, in the chair. Mr. H. Stuart Fremlin, M.R.C.S., of Mereworth, Maidstone, and Mr. Geo. Vernon Hudson, of Wellington, New Zealand, were elected Fellows; and Mr. William E. Nicholson was admitted into the Society. Mons. A. Wailly exhibited a large and interesting collection of Butterflies recently received from the Gold Coast and other parts of West Africa. The collection included about forty-seven species belonging to the genera *Papilio*, *Diadema*, *Salamis*, *Romalæosoma*, *Charaxes*, *Harma*, *Eurypheme*, *Junonia*, *Aterica*, *Hypanis*, *Eurytela*, *Mycalesis*, *Cyrestis*, *Nepheronia*, *Mylothris*, *Belenois*, &c. Mons. Wailly stated that several of the species were undescribed, and were not represented in the British Museum Collections. Mr. Jenner Weir exhibited four bred specimens of Ant-lions, two of which were from Saxon Switzerland, and the other two from Fontainebleau. He stated that he believed the specimens belonged to two distinct species. Mr. M'Lachlan said that the specimens all belonged to one species, viz. *Myrmeleon formicarius*, Auct. = *europæus*, M'Lach. Mr. W. C. Boyd exhibited an example of *Pterophorus zetterstedtii*, taken at Sydenham. He remarked that this species had hitherto only been recorded from Lynmouth and Folkestone. Mr. Enock exhibited specimens of *Cecidomyia destructor* (Hessian Fly), illustrating the life-history of the species, and made remarks on them. Mr. Wallis Kew exhibited a specimen of *Dytiscus marginalis* having a small bivalve shell attached to one of its legs. The bivalve had apparently attacked the *Dytiscus* and refused to relax its grasp. A discussion ensued in which Dr. Sharp, Mr. Stainton, and Mr. Kew took part. Mr. W. E. Nicholson exhibited several specimens of *Acidalia immorata*, Linn., caught by him near Lewes. Mr. Jenner Weir remarked that the species had only recently been added to the British list, and that it was remarkable how so comparatively large a species could have been hitherto overlooked. It was also remarked that a specimen of this species from the collection of the late Mr. Desvignes had been exhibited by Mr. Stevens at the meeting of the Society in Nov., 1887. Dr. Sharp exhibited a large number of species of Rhynchophora, collected by Mr. George Lewis in Japan. Mr. F. P. Pascoe read a paper entitled "Descriptions of new Longicorn Coleoptera." Dr. Sharp read a paper entitled "The Rhynchophorous Coleoptera of Japan."—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. — October 25th, 1888. John T. Carrington, F.L.S., Vice-President, in the chair. Mr. E. A. Atmore, of King's Lynn,

was elected a member. Mr. C. A. Briggs exhibited banded and other forms of *Gnophos obscuraria*. Mr. Wellman, on behalf of Mr. A. E. Hall, forms of *Lycæna icarus*. Mr. Goldthwait, an interesting form of *Triphæna orbona*, Hufn. (*subsequa*, Hb.), forms of *Argynnis paphia*, and the variety *ralesina*. Mr. Oldham, a fine variety of *Argynnis euphrosyne*, also species of Neuroptera, Hymenoptera, &c. Mr. Adye, varieties of *Epinephele ianira*, *E. hyperanthes*, *Ematurgia atomaria*, &c. Mr. Hawes, living larvæ of *Polyommatus phlœas*. Mr. Tutt, on behalf of Mr. P. Russ, of Sligo, a number of species of Agrotidæ, fine series of *Epunda lutilenta*, and contributed notes. Mr. West, of Greenwich, *Thyatira sericea*, from West Wickham. Mr. Jenner Weir, specimens of *Myrmeleon europæus*, L. (ant-lions), with cocoons, and made some remarks thereon.

November 8th, 1888. The Vice-President in the chair. Messrs. H. W. J. Vaughan, W. Warren, W. D. Cansdale, C. Fenn, F. Oswald, E. Brunetti, H. A. Sauzé, A. Short, H. E. Hopkins, D. Chiltenden, and Sydney Webb, were elected members. Mr. Wellman exhibited three bred series of *Acidalia aversata*, L. Mr. R. Adkin, *Crymodes exulis*, and *Pachnobia hyperborea*, from Shetland. Mr. Tutt, on behalf of Dr. Chapman, of Hereford, showed long series of *Acronycta tridens* and *A. psi*. Mr. Tutt stated that Dr. Chapman had told him that throughout the whole of the larval stages the two species were quite distinct. Mr. Step read a note from Mr. T. D. A. Cockerell, on the protective resemblance of a species of *Aphis* occurring near West Cliff, Custer County, Colorado, about 8000 ft. alt., to a parasitic fungus (*Puccinia bigeloviae*, Ellis & Everhart), very abundant on the *Bigelovia*, in the same locality.—H. W. BARKER, *Hon. Sec.*

REVIEW.

The Butterflies of the Eastern United States and Canada, with special reference to New England. By SAMUEL H. SCUDDER. Cambridge, Massachusetts, U.S.A.

MR. SCUDDER has for twenty years been engaged in collecting, preparing, and arranging material for the production of this important work, the first number of which appeared on November 1st, of this year. It will be issued in twelve monthly parts, and when completed will contain about 2000 figures on ninety-six plates, of which forty or more will be coloured. The whole of the Butterflies of New England will first be described and figured, and in an Appendix all those will be added which have not yet been taken within the limits of New England, but have been

captured within the limits indicated in the title of the work. Each species is described in the most ample manner; first, the name and full synonym is dealt with; then, to assist the student in making references, catch-words are printed in heavier type, and full descriptions are given of the Imago, Egg, Caterpillar, in all its stages, when known; Chrysalis, Geographical Distribution, Haunts, Food-plant of Caterpillar, Habits of Caterpillar, Pupation, Life-history, Habits, Flight, &c., Parasites, other headings when necessary; and lastly, under the head of "Desiderata," further information is sought for, if needed to complete the life-history of the species.

The plates are excellent, and embrace the whole development of the insect, from the egg to the imago; in all cases the explanation is given on the opposite page, a further great help to the student. There are also plates of the structure and scales; and to show the geographical distribution, there are small maps of the Nearctic continent, coloured to show the range of each species, which may thus be understood at a glance.

Another feature is the interpolation throughout the work of essays on general subjects connected with Butterflies, such as the Clothing of Caterpillars, the Eggs of Butterflies, the Modes of Suspension of Chrysalids, and other interesting themes.

The Satyrinæ, which are dealt with in this first part, are poorly represented in New England, even if *Cercyonis alope* and *C. nephele* are treated as distinct only eight species have been taken within its limits, as against eleven species, more or less common in England; on the other hand, we have but one of the Papilioninæ, and New England has six. Mr. Scudder remarks on the former sub-family, that not only in New England, but that in the whole of Eastern North America they are very poorly represented, and form but a mere fragment of the Butterfly fauna; in Western North America they are a little more abundant, but even there bear no such relation to the general fauna as they do in Europe, where they compose nearly one-third of the whole fauna, and are relatively more than four times as numerous as in New England. This is a very remarkable fact, seeing that this sub-family is more widely spread over the globe than any other.

Probably no work has been attempted or produced which deals with the Rhopalocera of a region in such a complete manner. No doubt the whole will be equal in merit to the excellent first part; and the high reputation in which Mr. Scudder is held, as an Entomologist of the first rank, will cause the appearance of each successive part to be looked forward to with eagerness.—J. J. W.

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